

Circle of Impact:
The Fatal
Footprint of
Cluster Munitions
on People and
Communities

**HANDICAP
INTERNATIONAL**

May 2007

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Funded under a grant from the Norwegian Ministry of Foreign Affairs,
the Belgian Development Cooperation, the German Federal Foreign Office
and in-kind contribution by ESRI GIS and mapping software

ISBN 13 978-92-95060-01-2

Cover photograph: © Sean Sutton / MAG / magclearsmine.org / 2007

Layout and Design: Manufast ABP

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“Why are you surprised?”

Response by a military representative to Handicap International's expression of shock that its preliminary report found 98 percent of cluster submunitions casualties were civilians.

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Acknowledgements

This report was conducted, written and produced by Handicap International (HI), with the financial support of the Governments of Norway, Germany, and Belgium.¹ HI also received in-kind support from the Survey Action Center (SAC) and Robert Eaton, as well as ESRI GIS and mapping software.

We would like to extend our thanks to the HI sections, headquarters and field offices, in particular Firoz Ali Alizada and Awlia Mayar at HI-Afghanistan; HI-B Cambodia and the Cambodia Mine/UXO Victim Information System (CMVIS); HI-Ethiopia; François De Keersmaecker at HI-Germany; HI-B Lao; and Steffen Schwarz of HI-Lebanon.

HI would like to express its appreciation to the many mine action organizations, organizations working with people with disabilities, disabled people's organizations, and other individuals and organizations that provided information, time, resources and expertise for this study.

HI owes special thanks to the cluster submunitions and mine/ERW survivors, families and communities who shared their experiences with us.

The HI team values the support of the International Campaign to Ban Landmines/Landmine Monitor and the Cluster Munition Coalition networks.

HI would also like to thank the following organizations and individuals for their assistance: the Albanian Mine Action Executive (AMAE), al-Jarha, al-Risala Islamic Scouts; International Secretariat, Amnesty International; Andrew Smith

of AVS Mine Action Consultants; the Association of Volunteers in International Service (AVSI); Aimal Safi and Susan Helseth of the UN Mine Action Centre for Afghanistan (UNMACA); the Belgian Army (BELUBATT); Naveed Ahmad Shinwari of the Community Appraisal and Motivation Program (CAMP); Clear Path International (CPI); Valon Kumnova and HALO Trust; Steve Goose and Mark Hiznay of Human Rights Watch (HRW); Zamanuddin Noori of the International Committee of the Red Cross (ICRC) in Afghanistan; Spokespeople of the International Criminal Tribunal for The Former Yugoslavia; Hamit Dardagan at Iraqi Body Count; Iraqi Health and Social Care Organization (IHSCO); Ahmed Sidiali, Zlatku Gegic and Simon Conway at Landmine Action-UK (LMA-UK); Suzana Srnic Vukovic of Landmine Monitor; Lina Abbas, Habbouba Aoun and Omar Hussein of the Landmine Resource Center (LMRC); Mines Advisory Group (MAG); the National Regulatory Authority of Lao People's Democratic Republic; Jelena Vicentic and Norwegian People's Aid (NPA); Project RENEW, the Tajikistan Mine Action Cell (TMAC); Salomon Schreuder and Daniel Ericsson at UNDP Iraq; Julien Temple and Reuben Nogueira-McCarthy from UNICEF; the UN Mine Action Coordination Center for South Lebanon (MACC-SL); Mohammad Kabir, Davide Naggi and the UN Mine Action Office in Sudan (UNMAO); the UN Mission for the Referendum in Western Sahara (MINURSO); and several people who provided anonymous information.

Lastly, the team would like to thank Gwendolyn Albert for her dedication and patience while proofreading the report.

Abbreviations and acronyms

AO	Aviatsionnaya Oskolochnyang (Aviation Fragmentation)	MAG	Mines Advisory Group
AXO	Abandoned Explosive Ordnance	MCC	Mennonite Central Committee
BLU	Bomb Live Unit	MDG	Millennium Development Goals
CBU	Cluster Bomb Unit	MoD-DoD	Ministry of Defense - Department of Defense
CBR	Community-Based Rehabilitation	MoSAL	Ministry of Social Affairs and Labor
CCW	Convention on Certain Conventional Weapons	MRE	Mine Risk Education
CDC	Centers for Disease Control and Prevention	NATO	North Atlantic Treaty Organization
CEM	Combined Effects Munition	NDO	National Demining Office
CIA	Central Intelligence Agency	NGO	Non-Governmental Organization
CMC	Cluster Munition Coalition	NPA	Norwegian People's Aid
DPICM	Dual-Purpose Improved Conventional Munitions	PRSP	Poverty Reduction Strategy Paper
EOD	Explosive Ordnance Disposal	PTAB	Protivotankovaya Aviatsionnaya Bomba (Antivehicle Aviation Bomb)
ERW	Explosive Remnants of War	SAC	Survey Action Center
FAO	Food and Agriculture Organization	UK	United Kingdom
GDP	Gross Domestic Product	UN	United Nations
HDI	Human Development Index	UNDP	United Nations Development Program
HI	Handicap International	UNICEF	United Nations Children's Fund
HPI-1	Human Poverty Index	UNIDIR	United Nations Institute for Disarmament Research
HRW	Human Rights Watch	UNHCR	United Nations High Commissioner for Refugees
ICBL	International Campaign to Ban Landmines	UNOPS	United Nations Office for Project Services
ICRC	International Committee of the Red Cross	UNMAS	United Nations Mine Action Service
IDP	Internally Displaced Person	US	United States
IMSMA	Information Management System for Mine Action	UXO	Unexploded Ordnance
LMA-UK	Landmine Action-UK	VFA	Veterans for America (previously Vietnam Veterans of America Foundation, VVAF)
LIS	Landmine Impact Survey	WFP	World Food Program
MAC-MACC	Mine Action Center/Mine Action Cell - Mine Action Coordination Center	WHO	World Health Organization
MAC	Mines Action Canada		

Definitions and scope of human impact²

- **Abandoned explosive ordnance (AXO):** means **explosive ordnance** that has not been used during an armed conflict, that has been left behind or dumped by a party to an armed conflict, and which is no longer under control of the party that left it behind or dumped it. Abandoned explosive ordnance may or may not have been primed, fused, armed or otherwise prepared for use.³

- **Cluster munition:** means containers designed to disperse or release numerous free-falling submunitions that are designed to detonate above ground, at impact, or in delayed mode.⁴

Note: Not included in this definition are carrier munitions that dispense mines, nuclear, biological, chemical, propaganda, electronic, or pyrotechnic submunitions.

This definition includes containers or parent munitions that are carried on or delivered by an aerial platform (e.g. an airplane or helicopter), or fired from ground or sea-based systems (e.g. a rocket launcher, artillery gun, naval gun, missile or mortar).

- **Cluster munition strike:** refers to the intentional use of cluster munitions on a target location.

- **Cluster submunition:** means **explosive ordnance** that, to perform its task, separates from a parent munition or dispenser.

Note: This definition includes all explosive ordnance designed to explode at some point in time following dispersal or release from the parent cluster munition.

This definition includes munitions that are sometimes referred to as bomblets (e.g. from air-dropped cluster munitions), grenades (e.g. from ground-launched artillery, rocket or missile systems) and "improved conventional munitions."

- **Explosive ordnance:** means conventional munitions containing explosives, with the exception of mines, booby traps and other devices as defined in Protocol II of the Convention on Conventional Weapons (CCW) as amended on 3 May 1996.⁵

- **Explosive remnants of war (ERW):** means **unexploded ordnance** and **abandoned explosive ordnance**.⁶

Note: This definition does not include landmines.

- **Footprint:** means the area affected by the submunitions from a single **cluster munition**.

- **Human impact:** means, in this specific context, the consequences of the use of **cluster munitions** and **submunitions** in conflict scenarios on or near human habitation; subsequent contamination of livelihood areas due to failed submunitions; and effects on well-being, economic opportunities, living environment and development both directly after strikes and in the post-conflict period.

- **Mine:** means a **munition** designed to be placed under, on or near the ground or other surface area and to be exploded by the presence, proximity or contact of a person (antipersonnel mine) or a vehicle (antivehicle mine).⁷

- **Munition:** means a complete device charged with explosives, propellants, pyrotechnics, initiating compositions, or nuclear, biological or chemical material for use in military operations, including demolitions.

Note: In common usage: "munitions" [plural] can be military weapons, ammunition and equipment.

- **Post-conflict:** means the time span *after* the end of conflict, commonly understood as the end of armed conflict. In this specific context, the term "post-conflict" is also used to denote the period coming after the **post-strike** emergency phase. The deaths and injuries that cluster munitions cause during this period can continue for decades.
- **Post-strike:** means, in this specific context, the time period immediately following the use of one or several cluster munitions on a target during a **cluster munitions strike**.

Note: Post-strike usually refers to a time span from immediately after the strike to the end of the emergency phase during which populations are exposed to the highest risk from unexploded cluster submunitions which have not been marked or cleared. This period can last several months to a year, but can take several years in the case of prolonged use and failing response.

- **Unexploded ordnance (UXO):** means **explosive ordnance** that has been primed, fused, armed, or otherwise prepared for use and used in an armed conflict. It may have been fired, dropped, launched or projected and should have exploded but failed to do so.⁸

Introduction

“ They were found on roofs, on beds, hanging by one wing through ceilings, and the only way for the bomb disposal squads to deal with them was to blow them up with a charge just wherever they happened to be... they tied the whole town up for three days - everything came to a standstill.”⁹

Similar words could often be read in media articles relating to Lebanon in the last few months. However, these words were uttered nearly 55 years ago after the British port town of Grimsby was hit with German SD-2 “butterfly” antipersonnel submunitions on 24 June 1943 - one of the first instances of recorded cluster munitions use.¹⁰ Cluster munitions were first developed and used during the Second World War by the Soviet Union and Germany. Cluster munitions were used extensively as a tool of modern warfare for the first time by the United States in Southeast Asia between 1965 and 1975.

Subsequent decades have seen cluster munitions used in at least 25 countries or areas that are not internationally recognized, and their use has been alleged in several other places. Until the recent Lebanon crisis, cluster munitions use only managed to spark intermittent international interest, and activism was unable to move governments to renege their preference to keep and use cluster munitions. However, calls for a comprehensive international ban of this indiscriminate weapon are becoming louder. Belgium has already taken this step, and many other countries have taken similar actions, such as moratoria, divestments and destruction of antiquated stockpiles. More importantly, Norway has taken the lead on negotiations towards a new international treaty on cluster munitions.

Most discussion in the negotiations will be generated around the definition of cluster munitions, failure rates and technical “fixes.” However, it is important to remember that cluster munitions are imprecise weapons designed to strike a greater surface area than many other conventional weapons by dispersing smaller yet highly lethal explosive submunitions. The submunitions are usually dispensed in the hundreds at the same time, sometimes in the thousands. Scattered on the surface, they create a “footprint” which is often hundreds of meters wide. Within the footprint, cluster submunitions indiscriminately kill and injure military targets and civilians.

Even if we accept the official low failure rates produced under optimal test conditions, in practice a large number of cluster submunitions fail to explode upon impact. Military personnel from user countries consider any post-cluster munitions strike environment a minefield. Due to their sensitivity in comparison with other types of explosive remnants of war (ERW), failed cluster submunitions continue to cause new incidents decades after conflicts.

Since their first deployment, tens of millions, perhaps hundreds of millions, of cluster submunitions have become the most deadly and persistent form of ERW. Unlike the initial blasts, failed cluster submunitions are more discriminate, affecting almost solely civilians. *Fatal Footprint: The Global Human Impact of Cluster Munitions*, a preliminary report in November 2006, found that 98 percent of recorded casualties were civilian. This preliminary report marked a watershed, establishing for the first time in a single document a global frame of reference for the human impact of cluster submunitions.

While technical ways are discussed to reduce the number of casualties, and comparisons are drawn to casualties caused by other weapons or other forms of human insecurity, unexploded cluster submunitions continue to impact hundreds of thousands of civilians, many of whom are children. Spreading through new conflicts, cluster munitions destroy lives, disrupt communities and prevent access to resources needed for economic recovery. The current report seeks to better establish the context, not of the conflicts or their perpetrators, but of the subsequent harm suffered by communities due to cluster munitions use against their "circle of life," that area encompassing basic human social and livelihood activities in every city, town and village of the world.

The vast majority of cluster submunitions casualties are not only civilians, but occur while people carry out their normal, daily livelihood activities in their usual and accustomed places. The direct socio-economic impact on cluster munitions-contaminated communities and countries is indisputable and cannot continue to be underestimated. Immediate identification and clearance of cluster submunitions from the "circle of life" is the only way to minimize post-conflict casualties, as was shown in Kosovo. In Lebanon, it is acknowledged that emergency clearance and prioritization of livelihood areas was the only way to halt the daily casualties. The experiences of Afghanistan, Cambodia, Iraq, Lao PDR, and Vietnam speak volumes: extensive cluster munitions use generally, and failed submunitions particularly, pose a volatile and generational threat to civilians when clearance efforts are delayed.

The following story is only one among thousands to be told from every country in which cluster munitions have been used against or near civilian populations:

"I have the records of my time in Baghdad...[there were] substantially more individuals who came in my office that filed claims that were valid, that I knew were valid, but I couldn't pay. Because of the rules associated with the funding, I didn't always have, week to week, enough money to pay all of the valid claims...I remember one claim where the gentleman...his children were injured by the cluster munition, and they had been playing out in their field, the 13th of August in 03. They saw the object...were attracted to it, went near it, picked it up or touched it, and it detonated. And one of the boys had his arm blown off; the girl had extensive burns on one side of her body; and the other boy had his eye shot out. And so I was able to pay \$3,000 for the injuries to his children."¹

A sum of US\$3,000 paid for the injury of three children is little compensation for the family's loss of their collective health and well-being, for the boys' loss of economic opportunity, the isolation for a girl disfigured in the manner described, the anguish of a family one moment whole and the next shattered. Within this report it was not considered appropriate to try to place a monetary value on the lives and well-being of people killed or injured.

Alongside this family stand the majority of impacted civilians for whom even the slightest compensation is far greater than they will ever hope to receive. The countries and regions in which affected communities live are usually poor, underdeveloped, and the economies in which they subsist are primarily agricultural. Already vulnerable, cluster munitions use and the subsequent contamination consequences they suffer only make them more so.

To address the humanitarian needs generated by cluster munitions more adequately and realistically, the research team called upon relevant sources to provide casualty and strike data in their possession. Some have answered that call outright in the public domain or anonymously. Many others have turned a blind eye to changing times: regardless, action on this issue is increasingly being demanded and taken. The story of the innocent civilian *victims*¹² will continue to be told and recorded to the greatest extent possible.

Additional issues of data collection were identified which need further attention: casualties during strikes are rarely recorded, details on certain groups of casualties are not (made) available, and in some cases media reports are the researcher's only recourse. When data collection exists, it is not proactive, not nationwide, and often fails to sufficiently differentiate device types, personal details, number of casualties involved, injury types and services provided. Data sets examined exhibit a lack of common terminology, standardized methodology, categories of information collected, and more often than not exhibit poor quality control and verification mechanisms.

This is a research project that has sought to improve understanding of the impact of cluster munitions by documenting short-, mid- and long-term casualties; the cumulative effects of disability and mortality; and the socio-economic impacts on families and communities. While by no means an exhaustive treatment of these impacts, the human character of the impact on affected communities comes into sharper focus.

Although the long-lasting effects of cluster munitions on the security and sanctity of homes and livelihoods are hard facts, they are often overlooked and the subject deemed too broad and interrelated for analytical discussion. However, assuring a secure and productive "circle of life" is the responsibility of all who share it.

On the international front, progress continues. The Third Review Conference of the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons, held from 6 to 17 November 2006, provided an opportunity for Member States to acknowledge and tackle the lasting human impact of cluster munitions – an opportunity which many seized. Entering the conference, six nations were affirming the need for a ban on cluster munitions. By the end of the conference, 25 nations were calling for such action led by the Government of Norway. Subsequently, at the Oslo Conference on Cluster Munitions from 20 to 23 February 2007, 47 states committed to reach a legally binding instrument by the end of 2008. With further meetings set for Lima and Vienna in 2007, and for Dublin in early 2008, there seems reason to hope that a positive end to the treaty process is in sight.

However, the attention the treaty pays to the human impact of cluster munitions will define what long-term actions are taken to meaningfully and consistently resolve the adverse effects these weapons have on those individuals, families, and communities who have paid the price. The true spirit and character of the process will be known by how it addresses human impact.

Katleen Maes

Brussels, 16 May 2007

A way forward to comprehensive victim assistance

Since February 2005, Handicap International has been calling on states to:

- Prohibit the production, use and transfer of cluster munitions;
- Support an international treaty on cluster munitions;
- Destroy their stockpiles of cluster munitions;
- Provide sufficient resources to support individuals, families and communities affected by unexploded cluster munitions and all other ERW.

In February 2007, Norway hosted a crucial conference that led to the adoption of the Oslo Declaration on Cluster Munitions. States joining the declaration committed themselves to “establish a framework for cooperation and assistance that ensures adequate provision of care and rehabilitation to survivors and their communities, clearance of contaminated areas, risk education and destruction of stockpiles of prohibited cluster munitions.”

Inclusion of assistance to *victims* (i.e. the affected individual, his or her family and community) is important, and since the adoption of the Mine Ban Treaty this has become an accepted principle. However, due to the brief nature of the declaration, the lack of explicit mention of social and economic reintegration can be interpreted as a step back from the Mine Ban Treaty, which also includes these two in addition to the (medical) care and (physical) rehabilitation mentioned in the Oslo declaration.

The authors of this report, building on 25 years of HI field experience and nearly 10 years of Mine Ban Treaty monitoring, would like to propose the following suggestions for comprehensive victim assistance.

While not intended to be all-inclusive, a few basic principles of victim assistance are:

- Assistance should not be limited to the directly affected individual but should also extend to his or her family and the affected community.
- Care for *victims* is a long-term issue that needs to continue after the last mine/ERW is cleared.
- Victim assistance involves six components: data collection, emergency and continuing medical care, physical rehabilitation, psychological and social support, economic (re)integration, and disability laws and policies.
- Victim assistance is a human rights issue, assuring equal rights for those affected.
- Victim assistance is not carried out in isolation, but as part of initiatives for other people with disabilities and mine action, as well as cross-cutting public health, development, and poverty reduction strategies.

Victim assistance is the prime responsibility of the affected state, but consistent and long-term support for it by the international community is needed. Victim assistance programming can only be effective if it is based on the needs identified by the *victims* themselves and if they have direct input into policy-making and planning at the local, national and international levels. Assistance can only be sustainable and efficient if it builds on national ownership and systematic coordination between all stakeholders.

The main challenges for victim assistance which we have identified are:

- Access to care: this includes physical access, economic accessibility, and access to information, all of which must be provided in a culturally appropriate manner.
- Variety and effectiveness of assistance: all components of victim assistance should be considered interrelated and equally important. Referral systems need to be in place and need to be reinforced.

- Capacity and sustainability: this includes infrastructure and human resource capacity, which needs to be reinforced by training and increased retention of staff. National and local services should gradually replace international ones, for which national states should seek increasingly diversified funding.
- Rights implementation: implementation of general and specific legislation addressing discrimination against people with disabilities should be reinforced.
- Monitoring of progress: due to the diverse nature of victim assistance and to the voluntary nature of reporting on it, progress for both victim assistance-specific and cross-cutting programs beneficial to victims is not being adequately mapped.
- Prioritization: mine/ERW assistance is often not seen as a priority in comparison to other emergencies, such as conflicts and HIV/AIDS; this is especially the case for cluster submunitions victim assistance.

While recognizing that victim assistance needs to be tailored to the requirements of each specific individual and the affected community, some general principles definitely apply, which need to be addressed in treaty text:

- In order to acknowledge the human impact caused by cluster submunitions and to raise the profile of assistance to those affected, victim assistance should be mentioned under the heading of the general obligations.
- A definition of the cluster submunitions *victim* should be included under the definitions section, i.e. the affected person as part of a larger group of people with disabilities, his or her family and community.
- Further, a separate article on victim assistance should be created which clearly reflects the varied and complex nature of victim assistance and indicates the dual responsibility of both national and international actors. While this report is not the place to propose such a draft article, the following components would reinforce victim assistance efforts:
 - Each State Party undertakes to provide comprehensive assistance to cluster submunitions *victims*, using existing systems or creating specialized services when needed.
 - Each State Party commits to promote, protect, ensure and report on full and equal access to all human rights and fundamental freedoms by all cluster submunitions *victims*, as well as to promote respect for their inherent dignity.
 - Such promotion includes, but is not limited to: the implementation of data collection, emergency and continuing medical care, physical rehabilitation, psychological support, social inclusion, economic inclusion and reintegration, legal support, disability laws and policies – directly linked with the affected communities (i.e. as close to them as possible).
 - These efforts will be systematically coordinated, planned and prioritized, and roles of responsibility will be delegated to the competent authorities and to the *victims* to ensure national ownership and sustained capacity of the affected states.
 - Where relevant, victim assistance will be linked to broader development, poverty reduction, public health, and disability initiatives.
 - If a State Party believes that it will be unable to ensure the provision of assistance to cluster submunitions *victims*, that State Party undertakes to submit a request to other States Parties indicating the nature of the proposed programs, objectives, assessment of the needs of beneficiaries, circumstances which impede the ability of the State Party to assist the *victims*, and any other information relevant to the request for assistance.
- Under international cooperation, exchange of information and expertise as well as providing information to the relevant data collection repositories should not be limited to clearance activities, but should extend to other components of ERW action, including victim assistance. This is in addition to the provision that States Parties in a position to do so will support the assistance efforts of affected states, in cooperation with relevant national and international actors.
- Under transparency measures, reporting on progress in victim assistance, both specific programs and relevant cross-cutting programs, should be obligatory for both affected and donor states.

In addition to the victim assistance-specific components, the authors of this report, together with their colleagues from the Cluster Munition Coalition, believe that a future treaty on cluster munitions must include, as a minimum:

- A prohibition on the use, production, transfer and stockpiling of cluster munitions, as defined;
- A definition of cluster munitions that does not exclude those that have submunitions equipped with self-destruct mechanisms;
- No provision allowing for cluster munitions with submunitions with a certain reliability standard;
- Application in all circumstances, including during conflicts of either an international or a non-international nature;
- A prohibition on providing assistance to anyone to use, produce, transfer or stockpile cluster munitions;¹³
- An obligation to destroy their stockpiles of cluster munitions within a specified period of time, which must be as short as possible;
- An obligation to mark, fence, and clear contaminated areas as soon as possible, but no later than a specified deadline, and to establish and maintain effective capacity to undertake these actions;
- An obligation to provide assistance with marking, fencing and other warnings, risk education and clearance; users of cluster munitions should have special obligations to participate in such assistance, including the provision of timely and detailed information on use;
- An acknowledgement of the responsibility to protect civilians from cluster munitions at all times through the obligations contained in the new treaty;
- A compliance provision committing states to provide maximum cooperation and transparency;
- An obligation to submit annual transparency reports;¹⁴
- A requirement to adopt national implementation measures, including penal sanctions;
- A provision prohibiting any reservations to any articles of the treaty;
- A provision prohibiting withdrawal from the treaty if engaged in armed conflict;
- Provisions for annual meetings of States Parties and regular Review Conferences;
- No provision for a transition period on the prohibition on use, production and transfer;
- No geographic exceptions for the prohibition on use, production and transfer.

Timeline

Cluster submunitions use and user timeline		
Year	Country/Area	Used By
1965	Lao PDR • Vietnam	United States (US)
1966	Lao PDR • Vietnam	US
1967	Lao PDR • Vietnam	US
1968	Lao PDR • Vietnam	US
1969	Lao PDR • Vietnam • Cambodia	US
1970	Lao PDR • Vietnam • Cambodia	US
1971	Lao PDR • Vietnam • Cambodia	US
1972	Lao PDR • Vietnam • Cambodia	US
1973	Lao PDR • Vietnam • Cambodia • Syria	US • Israel
1974	Vietnam	US
1975	Vietnam • Western Sahara	US • Morocco
1976	Western Sahara	Morocco
1977	Western Sahara	Morocco
1978	Western Sahara • Lebanon	Morocco • Israel
1979	Western Sahara	Morocco
1980	Western Sahara • Afghanistan	Morocco • Soviet Union
1981	Western Sahara • Afghanistan	Morocco • Soviet Union
1982	Western Sahara • Afghanistan • Lebanon	Morocco • Soviet Union • Israel
1983	Western Sahara • Afghanistan	Morocco • Soviet Union
1984	Western Sahara • Afghanistan	Morocco • Soviet Union
1985	Western Sahara • Afghanistan	Morocco • Soviet Union
1986	Western Sahara • Afghanistan	Morocco • Soviet Union
1987	Western Sahara • Afghanistan • Chad	Morocco • Soviet Union • Libya
1988	Western Sahara • Afghanistan	Morocco • Soviet Union
1989	Western Sahara • Afghanistan	Morocco • Soviet Union
1990	Western Sahara	Morocco
1991	Western Sahara • Kuwait, Iraq, Saudi Arabia • Croatia • Eritrea	Morocco • US/Coalition Forces (US/CF) • Republic of Serbian • Krajina (RSK) • USER • Ethiopia
1992	Croatia • Bosnia and Herzegovina • Tajikistan • Nagorno-Karabakh	RSK • Internal factions • Tajikistan government forces (TGF), Russia • Azerbaijan
1993	Croatia • Bosnia and Herzegovina • Tajikistan • Nagorno-Karabakh	RSK • Internal factions • TGF, Russia • Azerbaijan
1994	Croatia • Bosnia and Herzegovina • Tajikistan • Nagorno-Karabakh • Chechnya	RSK • Internal factions • TGF, Russia • Azerbaijan • Russia
1995	Croatia • Bosnia and Herzegovina • Tajikistan • Chechnya • Sudan	RSK • Internal factions, NATO • TGF, Russia • Sudanese government forces (SGF)
1996	Tajikistan • Chechnya • Sudan • Afghanistan • Lebanon	TGF, Russia • Russia • SGF • Northern Alliance, Taliban • Israel
1997	Tajikistan • Sudan • Afghanistan • Sierra Leone	TGF, Russia • SGF • Northern Alliance, Taliban • Nigeria/ECOMOG
1998	Sudan • Afghanistan • Ethiopia	SGF • Northern Alliance, Taliban • Eritrea
1999	Sudan • Afghanistan • Albania • Serbia, Montenegro, Kosovo • Chechnya	SGF • Northern Alliance, Taliban • NATO, Serbs • NATO • Russia
2000	Sudan • Afghanistan • Eritrea	SGF • Northern Alliance, Taliban • Ethiopia, Eritrea
2001	Afghanistan	US
2002	Afghanistan	US
2003	Iraq • Kuwait	US/CF
2004	Iraq	US/CF
2005	Iraq • Lebanon	US/CF • Israel
2006	Iraq • Lebanon • Israel	US/CF • Israel • Hezbollah

Team and methodology

Initial inquiries clearly indicated the need to analyze data from all casualties caused by cluster submunitions, including both those people killed and injured as a result of cluster munitions strikes and people involved in incidents resulting from submunitions as remnants of war.

Handicap International utilized its field and research experience in the area of victim assistance and data collection to provide a better understanding of the human impact and socio-economic consequences of cluster munitions use on populations in 25 contaminated countries and areas not internationally recognized.

The report takes a global approach and is divided into two parts: a general overview section and individual country profiles organized in regional chapters. The general overview addresses issues of the working definitions utilized in this report, cluster munitions use over time, the most frequently used types of cluster submunitions, global status tables, and a policy message. The individual country profiles take into account both the wider regional and historical context as well as the country-specific characteristics of cluster munitions used. Confirmed cases of cluster munitions use and subsequent human impact have been elaborated for their relevance with regard to the scale of contamination, historical and contemporary significance, and various ways of dealing with and recording post-strike impact. The research has been divided into five regions: Africa, the Commonwealth of Independent States (CIS), the Greater Middle East and North Africa region (MENA), Southeast Asia (SEA), and Southeastern Europe (SEE). While not exhaustive, all country profiles were analyzed to the highest relevant detail possible, in line with the level and quality of information available. Geographical, historical and contamination diversity and parallels are highlighted.

Cases of suspected cluster munitions contamination and subsequent casualties have been enumerated in an annex table to invite debate and new information. Several additional suspected countries were investigated but excluded from the table, as the type of munition was not considered to be covered by this report's definition or because information on possible casualties could not be corroborated.

Each country profile contains a short background section giving a basic set of economic and development indicators and elaborating cluster munitions use and contamination to set the scene for the potential extent of unexploded cluster submunitions pollution and developmental consequences. Where possible, contamination and casualty estimates are provided; in other cases, the availability and completeness of casualty data and injury surveillance mechanisms are assessed in order to define the scope of underreporting.

Available casualty data are presented and analyzed to the fullest extent possible to draw a casualty profile to be used in assistance planning and to be taken into account when considering the unwanted effects of cluster munitions use. The most detailed original data possible was obtained to identify who were the most impacted groups, both in terms of becoming casualties and in terms of future socio-economic risks. The study looks at who the casualties are, why they are, where they are during strikes, the immediate aftermath, and the long-term post-conflict situation in order to assess who will be the most likely future casualties. In addition, areas most impacted by cluster munitions were identified. The area approach combines both the profiling of the geographical locations targeted as well as a review of the larger consequences on development and human security. When possible, these combined impacts on human life, resources and the public sector were summarized in an impact table.

For certain key countries maps were produced plotting original cluster munitions strike data and overlapping casualty incidents. Most maps contain all the strike data that was made available, but much was not made accessible and the maps should therefore be considered incomplete in nature.

The existing capacity to respond to the threat was summarized and, where relevant, recommendations on the steps forward were given. These recommendations are not exhaustive and are based on the direct results of the country research.

A selection of community experiences was included to show the human face of cluster submunitions casualties.

This report is part of an ongoing research project started in April 2006 that produced a first report, *Fatal Footprint: The Global Human Impact of Cluster Munitions*, in November 2006. The research resulting in this second report was conducted from mid-February to the end of April 2007 by a team of researchers, information providers and experts with experience in mine action, mine victim assistance, data collection and post-conflict societies.

Initially, updated background information on cluster munitions use, technical specifications, and existing published information on cluster submunitions casualties was compiled and studied. Following that, a broad range of research methods, including analysis of publications, email, telephone and face-to-face interviews (at international forums) were used. A data gathering and management system was developed to store, streamline and correlate casualty data, strike data and technical specifications. In addition, a field trip to Lebanon was undertaken from 16 March to 20 March. Information from previous field trips to, among other places, Lebanon (September 2006), Cambodia (April and November 2006), Kosovo (October 2005), and Afghanistan (August 2006) was also included. One team member is based in Vietnam, and experience and resources within the Cluster Munition Coalition and the International Campaign to Ban Landmines were employed.

Where possible, original data was used, but failing that, tailor-made queries were drawn up for relevant experts and information providers supplying both casualty data and correlating strike data. The results of these enquiries, as well as other responses, were compiled, standardized, crosschecked and analyzed. The study employed quantitative analysis of the statistical data available from existing data collection systems and the research team's own data collection. The researchers extracted information on specific numbers of casualties, age, gender, groups most at risk, time, location, activity and nature of the incident, for each country profile. Estimates and a large number of casualty records and strike data that contained insufficient detail or that could not be crosschecked or independently verified were not included in the analysis.

The study aims to detail the human impact and the scope of the problem to increase the possibilities for improved, more effective and varied assistance for the *victims*, i.e., the affected individual, his or her family, and the affected communities. Handicap International sections, in partnership with other civil society groups in cluster munitions-affected countries and others in four continents, will disseminate the study to provide systematic information and to support others in preventing similar incidents from occurring in the future.

By looking at data collection mechanisms and examining the degree to which they are systematic, effective, and how comprehensive the resulting data is, the study identified areas where information collection and database resources are in need of support.

This research has compiled the most comprehensive publicly available data on various aspects of the human impact of cluster submunitions. Nevertheless, the authors acknowledge much required information is missing. As in November 2006, they continue to call on relevant sources to provide casualty and strike data in their possession so that the humanitarian needs generated by cluster munitions can be addressed more adequately.

Research team

- Stan Brabant (Head, Policy Unit, Handicap International, Brussels, Belgium) assisted in many aspects of the report's production and development, and together with Katleen Maes and Hugh Hosman developed the vision of the study and defined the research methodology.
- Hugh Hosman (Data Management and Victim Assistance Specialist, Hue, Vietnam) conducted research on Southeast Asia and was in charge of data management, as well as study conception.
- Cindy Gorn (Junior Researcher, New York, US) conducted research on Tajikistan and Nagorno-Karabakh and suspected countries.
- Sebastian Kasack (MRE Coordinator, Hamburg, Germany) prepared the impact scoring table, definitions and conducted fact-checking.
- Katleen Maes (Victim Assistance Coordinator, HI, Brussels, Belgium) conducted research on Afghanistan, Iraq and Lebanon and was in charge of general coordination and final editing of the report, as well as the study concept.
- Loren Persi (Victim Assistance and Arms Specialist, Prague, Czech Republic) conducted research on Southeastern Europe, Chechnya, and terminology/definitions.
- Patrizia Pompili (Researcher, HI, Brussels, Belgium) conducted research on Africa and the Middle East.

Data collection and analysis

The availability of data concerning cluster munitions use, along with subsequent cluster submunitions contamination and casualties, is problematic at best and non-existent at worst. Casualty data from at least 45 sources, including the Information Management System for Mine Action (IMSMA), Landmine Impact Surveys (LIS), local data collectors, NGO and media sources was analyzed for the 25 countries and areas where casualties were confirmed and for 15 countries where casualties are suspected, eight of which have been included in the annex table to this report. Total compiled records for mine/ERW casualties amounted to well over 100,000 casualties, but only cluster submunitions casualties that could be independently cross-checked have been used for the purposes of this study. Strike and contamination information was compiled from approximately 14 sources for nine countries and areas. Where possible, original raw data was used. Some of the strike and casualty data will have to undergo further analysis, due to the size and incompleteness of the files.

Although this global overview of the issue of the human impact of cluster munitions, made possible by so many records, is unprecedented, there were stark contrasts between various data collection mechanisms and sources. Some sources were able to provide clear, minute details of casualties or strikes, while others were only able (or only chose) to provide the most minimal and/or aggregated data. Case studies for both data types are provided here for comparison and contrast.

Major issues typical of casualty data collection evidenced during research that warrant further attention were:

- Data collection is often not a priority; this is reflected in the quality and completeness of the data.
- There is a lack of capacity, means, and resources for the adequate performance of relevant tasks.
- Data collection is not proactive.
- Geographic and demographic coverage is limited.
- Differentiation of device types, personal details, number of casualties involved, and injury types is insufficient, and these details may be aggregated to the point that they are unusable.
- Data sets exhibit a lack of standardized methodology, terminology, and categories of information collected, both between and within data sets.
- Most data collection exhibits poor quality control and verification mechanisms, resulting in duplications and fields containing the wrong type of information.
- Details for certain groups or locations are either not available or are censored.
- Casualties during strikes are rarely recorded.
- Differentiation between strike and post-strike casualties is not performed and is complicated by overlapping strikes, particularly from different use periods.
- Retroactive data collection or surveying is rarely conducted.
- Very few data collection mechanisms are able to provide socio-economic or assistance information, and those who collect this type of information do not seem to do so consistently.
- Actors are not able to extract queries to the level of detail needed for meaningful analysis.
- Data is not shared for planning purposes or does not have the level of detail needed for planning.
- Transparency on data collection is impeded by political circumstances, further impeding any assistance projects.
- When more than one actor performs data collection activities, this mostly results in separate, competing database systems which are not synchronized and as a result contain overlapping and contradictory information.
- Some static data is under embargo to the point that it does not reflect the current situation anymore.

- Casualty data is insufficiently linked to contamination data.
- Casualty data is not fed into a referral mechanism for survivors, resulting in data collection for compilation rather than assistance purposes, which might result in those interviewed becoming "data victims."

As an example of extremes in data collection quality in one country, Lao PDR provides a simple comparison. There are two datasets in Lao PDR – that of the Handicap International-Belgium national survey for *Living with UXO*, and those records kept by UXO Lao.¹⁵ The *Living with UXO* national survey covers a period of 26 years in all 18 landmine/ERW-impacted provinces and is a static or finite dataset. Data collection methodology and data entry received a great deal of attention and standard terminology for activities, locations, and device types was used throughout the dataset, which includes all essential details, such as the year of the incident, gender, age, outcome, activity, location, marital status, injuries and all necessary details on multiple casualties reported by interviewees. For an example of completeness within the dataset, sufficient details were available to easily categorize activities: within the "handling" category there were several distinct types of handling activity, from defusing to removing from cultivated areas. As a result, the percentage of casualties caused by unknown device types was recorded as very low.

By contrast, UXO Lao is an ongoing and open-ended data collection mechanism that currently covers a period of 10 years and a limited number of districts in only 50 percent of all provinces. Data collection is not proactive within this context. Notably, in some districts with high rates of casualties in the *Living with UXO* survey, there were either small percentages of casualties recorded by UXO Lao in comparison, or no new casualties recorded whatsoever. Overall, underreporting by UXO Lao is officially estimated at a minimum of 50 percent nationwide. The UXO Lao dataset features a high rate of incomplete records, particularly with regard to device, location and activity type details. Where these details did exist, they exhibited a sporadic consistency in terminology and were characterized by wide variations in spelling, indicating a lack of standardized methodology in data collection; moreover, this prevents the use of queries.

Similar inconsistencies in spelling and activity terminology were displayed in the various Lebanon datasets, aggravated by duplicate casualty data, incident dates predating use of cluster munitions, and censorship of military casualties and activities for a large proportion of adult males. Afghan casualty data also could not be mapped to the level of detail needed, as villages and districts were mixed and area codes were used inconsistently.

Practices for identifying and recording the type of explosive device which caused the incident in casualty data are often insufficient. In many cases, this type of distinction is recent, resulting in only 127 files where the device type is differentiated out of more than 65,000 files in Cambodia, for example. In other cases, such as Chad, the device type is recorded as unknown ERW. In Iraq, 25 percent of more than 21,000 casualty records are of the "unknown ERW" type and an even larger proportion is recorded as "unknown device" altogether. In Afghanistan, a shift in methodology to record more ERW casualties is clearly visible over time which cannot be explained by better data collection or increased ERW incidents alone.

The lack of standardized age group and gender methodology limits analysis of high-risk groups. In certain datasets, the gender of children is not displayed, whereas the typical child casualty is male. When dealing with pre-analyzed casualty data, age is often displayed in varying age-group ranges (for example, 15 to 21 years old). Additionally, the cut-off point for child casualties is culturally adapted to 21 or 15 years old, whereas the standard age limit is 18. These issues make analysis of regional or global trends more cumbersome.

Activity entries are not only incoherent in terms of terminology and parameters used, but also in recording the actual activity the casualty was carrying out when encountering a cluster submunition. In some cases, this results in a disproportionate number of tampering casualties, while additional remarks in the record clearly indicate the main activity of the casualty or group of casualties at the time of the incident was livelihood in type, for example in Kosovo.

In many cases, the number of casualties per incident is not recorded even though the typical trademark of a cluster submunitions incident is multiple casualties. The inclusion of this type of information is crucial for assistance providers and community development projects.

Mostly, if recorded at all, injury information was aggregated into a single text string, making accurate analysis of this data type impossible within the timeframe of the study, as was the case for Afghanistan and Lao PDR.

Issues with strike data to a large extent mirrored those of casualty data collection and also warrant further attention:

- A large percentage of cluster munitions strike data cannot be obtained in the public domain.
- Details for most cluster munitions use locations were incomplete.
- Poor quality-control and verification mechanisms were exhibited.
- Strike data was often aggregated into sub-datasets which had mixed datum and coordinate systems.
- Strike data were not released to operators dealing with the post-strike impact in a timely manner.
- The issue unique to strike data was that for cluster munitions capable of delivering more than one payload, often the submunition type was not specified, complicating the identification of potential contamination.
- Strike data is insufficiently linked to subsequent contamination assessments.

However, the strike data alone is not sufficient: projections of initial cluster submunitions contamination (battle damage assessments) and the extent of landmine/ERW clearance should be integrated with the strike data. Strike coordinates are easily mapped, but they are not sufficient to determine where cluster submunitions-suspected hazard areas (SHA) are. Due to their wide-area dispersion, the altitude from which the cluster munitions are released, the vector of attack, the wind velocity, and the typical footprint of the cluster munitions deployed are also required to establish an SHA with reasonable accuracy.

The strike data for Southeast Asia and Kosovo were used for comparison and contrast. The former consisted of nearly 200,000 strike records, while the latter consisted of pre-analyzed NATO strike data available through IMSMA. While both data sets evidence inaccuracies, the proportions of that inaccuracy are significantly different, as are the durations and volume of cluster munitions use. Strike data of cluster munitions use over a period

of eight years (1965 to 1973) is available for the three Southeast Asian countries of Cambodia, Lao PDR and Vietnam. The level of detail in the data makes exhaustive analysis possible: dates, coordinates, numbers and types of aircraft, load quantities and weights, ordnance used, targets and battle damage assessments are included. While there are numerous erroneous entries, in general the dataset offers an unprecedented view of the types of cluster munitions used, their targets, and an indication of human impact.

Both contamination and strike data for Kosovo have been highly problematic and illustrate issues of accuracy, transparency, and the timeliness of data provided by users. NATO's ability to produce accurate strike records was already questionable from the time of the emergency post-strike period, as noted in this statement by the US Department of Defense Assistant Secretary of Defense for Public Affairs in July 1999:

*"The U.S. dropped about 1,100 cluster bombs... they were dropped in a number of places. I'm trying to find out if we have an estimate of how many were dropped in Kosovo alone, but so far that estimate has eluded me. And we may not have it. We just may not have kept records in that way."*⁶

The project performed initial analysis of strike data over a 42-year period for 28 percent of 25 countries or areas (Afghanistan, Cambodia, Iraq, Kosovo, Lao PDR, Lebanon and Vietnam), confirming the use of at least 440 million cluster munitions. Analysis shows that only 12 percent of cluster munitions-affected countries or areas (three) have near complete strike data available, while 16 percent (four) have limited and 64 percent (16) have no strike data whatsoever available. Two provided area contamination details. An overwhelming majority, i.e. 96.8 percent (12,886) of all confirmed submunitions casualties occurred where there is limited or no data for cluster munitions strikes.

Such a response is unsatisfactory given the established impact of cluster munitions on civilian populations and areas. The strike data eventually provided by NATO appeared to contain "glaring inaccuracies" and contaminated areas were found that did not correlate with the data provided.¹⁷ While the US Department of State reported that strike data was provided within six months of the end of hostilities to facilitate ERW clearance,¹⁸ according to the Mine Action Coordination Center (MACC) "NATO did not provide detailed information on the air strikes that dropped 1,392 cluster bombs on Kosovo until... nearly a year after the conflict ended."¹⁹ Nor did the data contain the detail the MACC had requested, such as the plane's direction of strike or wind conditions.²⁰ In addition, the version of IMSMA used (version 1.2.) could not adequately depict ERW and cluster munitions strikes, which were recorded simply as "danger areas" without detail.²¹ Reportedly, all known strike areas were cleared to international standards by 2002.²² However, clearance and UN teams continued to find cluster submunitions in areas not considered affected in 1999-2001. In 2007, it was reported that 61 new cluster munitions hazard areas remained, mainly in the west of the country.²³ The situation indicates either that the cluster submunitions failure rate was far higher than the official estimates, or that more submunitions were used than records provided, or perhaps both.

The Kosovo example illustrates that complete and accurate disclosure of cluster munitions use-coordinates is necessary in conjunction with immediate, ongoing clearance. The recent conflicts in Lebanon and Iraq likewise highlight this issue of accurate use-data in connection with the immediate clearance response.

Provided sufficient information, marking, reconnaissance, MRE, area reduction and clearance, victim assistance programs and post-strike repairs of impacted infrastructure could be mounted swiftly and effectively, thereby reducing not only the short-term but also the mid- and long-term impacts of cluster submunitions. However, this is generally not the case; for the majority of countries and areas impacted by cluster submunitions, the strike data either remains elusive or classified and restricted. In many cases, notably in Southeast Asia and Iraq, years passed before any data was released at all.

In short, both data types – casualties and use – are needed to form a comprehensive and utilitarian overview of the human impact of cluster munitions. However, to form a sufficient overview of the socio-economic impact of cluster munitions on communities, still other data must also be integrated into the matrix. Mapping of land use and poverty levels in conjunction with indicators for poverty reduction projects, emergency medical and rehabilitation capacities, community development, and infrastructure projects have yet to be linked to specific types of contamination, casualty locations and clearance activities. Forming humanitarian response priorities based on all these elements is crucial to identifying and minimizing the human impact of cluster munitions use.

FOCUS: Southeast Asia

The Second Indochina War, which began in Vietnam and spread to the neighboring countries of Cambodia and the Lao People's Democratic Republic (Lao PDR), was characterized by high levels of US aerial bombardment. The number of cluster munitions used was of a staggering volume, of which a substantial proportion was delivered either within or near human habitation, or well within the immediate "livelihood circle" of tens of thousands of communities. Subsequently, for over three decades all three countries have faced varying degrees of persistent cluster submunitions casualties and contamination which impact only civilians, primarily children.

CAMBODIA



Key findings

- Differentiation of cluster munitions casualties started in September 2006. So far, 127 casualties have been identified.
- Handling cluster submunitions was the leading activity among all casualties, at 55.9 percent.
- Boys in the six to 15 year old age group were 37.8 percent of all cluster submunitions casualties and 47.9 percent of all handling casualties.

- One-third of all cluster munitions fell within one kilometer of villages.

Country indicators²⁴

GDP (purchasing power parity): US\$36.78 billion (2006 est.)

GDP - per capita (PPP): US\$2,600 (2006 est.)

GDP - composition by sector: (2004 est.)

- agriculture: 35 percent
- industry: 30 percent
- services: 35 percent

Labor force - by occupation: 7 million (2003 est.)

- agriculture: 75 percent
- industry: N/A
- services: N/A

Unemployment rate: 2.5 percent (2000 est.)

HDI: 0.583, Cambodia is ranked 129th out of 177 countries in the low human development group.²⁵

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 39.3. Cambodia is ranked 73rd out of 102 developing countries.²⁶ Approximately 40 percent of the population lives below the poverty line.

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by the US from 1969-1973.²⁷

Cluster submunitions used: The most-used types of cluster submunitions were: BLU-3, 18, 24/66, 26/36/59, 49, 61, 63/86, 77 and Mk118 (Rockeye).²⁸

Number of cluster submunitions used: At least 26 million antipersonnel and anti-material cluster submunitions were delivered from at least 80,173 cluster munitions dispensed by 15,889 aircraft. The Mk118 was the most common at 30.1 percent (7.82 million), followed by the BLU-26 series (26/36/59) at 27.6 percent (7.18 million).²⁹

Contamination estimate: At least 1.3 to 7.8 million submunitions remained unexploded upon impact.

Failure rate estimate: Official failure rates for most cluster submunitions used in the period were five to 10 percent. However, the BLU-26 was known to have a test failure rate of 26 percent, and would likely have a minimum failure rate of 30 percent and a maximum failure rate of possibly as high as 50 percent on the ground.

Number of recorded casualties: Complete casualty data is not available as the Cambodia Mine and UXO Information System (CMVIS) only started differentiating device types among ERW casualties in September 2006. However, at least 127 casualties were confirmed as of March 2007.

Estimated casualties: Estimates range from as low as 30,000 to as high as 500,000 Cambodians killed during the US bombing campaigns.³⁰ Given the level of cluster munitions used in and near villages, a meaningful portion of these casualties would have been caused by cluster submunitions.³¹

Human impact measure

*Casualty data analysis*³²

Confirmed casualties: 1998–2007				
	Total	Strike	Post-strike	Post-conflict
Grand total	127	N/A	N/A	127
Injured	98			98
Killed	29			29
Unknown status	0			0
Man	42			42
Woman	13			13
Boy	61			61
Girl	11			11
Military	0			0
Deminer	0			0
Unknown	0			0
Dominant activities	Handling submunitions: 71			
Dominant location	Cultivated areas (35), grazing land/forest (32), and in the village (30)			

In total, 127 cluster submunitions casualties were reported from 1998 to 2007: 29 killed, 98 injured. Child casualties were 56.7 percent (72: 61 boys and 11 girls) of the total. Among cluster submunitions casualties, 26.8 percent (34) were married and all were of working age (18–50) – 26 were men and eight women.

Data collection is considered nearly complete and CMVIS is the definitive source of mine/ERW casualty data.³³ CMVIS contains records on over 62,556 casualties, which are collected through the Cambodian Red Cross network and mine action operators.³⁴

However, it was only as of September 2006 that CMVIS deployed a new data collection form for differentiating ERW types, including cluster submunitions, and began implementation training with local data collectors.³⁵ For analysis purposes, a total of 127 detailed records were available for cluster submunitions casualties involved in 64 incidents in 18 provinces of Cambodia dated from 1998 to 2007.³⁶

There are not enough records in which ERW item types are differentiated to permit establishing definitive trends regarding demographics of casualties, predominant activities and locations, or morbidity. However, the available data suggests that the trends among cluster submunitions casualties in Cambodia are similar to those in the other affected countries of the region, with livelihood and handling as the most common activities at the time of the incident. Livelihood areas are the most common location.³⁷ Based on those regional trends, it is possible that as much as 40 percent of all ERW casualties are attributable to cluster submunitions in highly impacted areas where ERW casualties are prevalent and persistent.³⁸

Most impacted groups

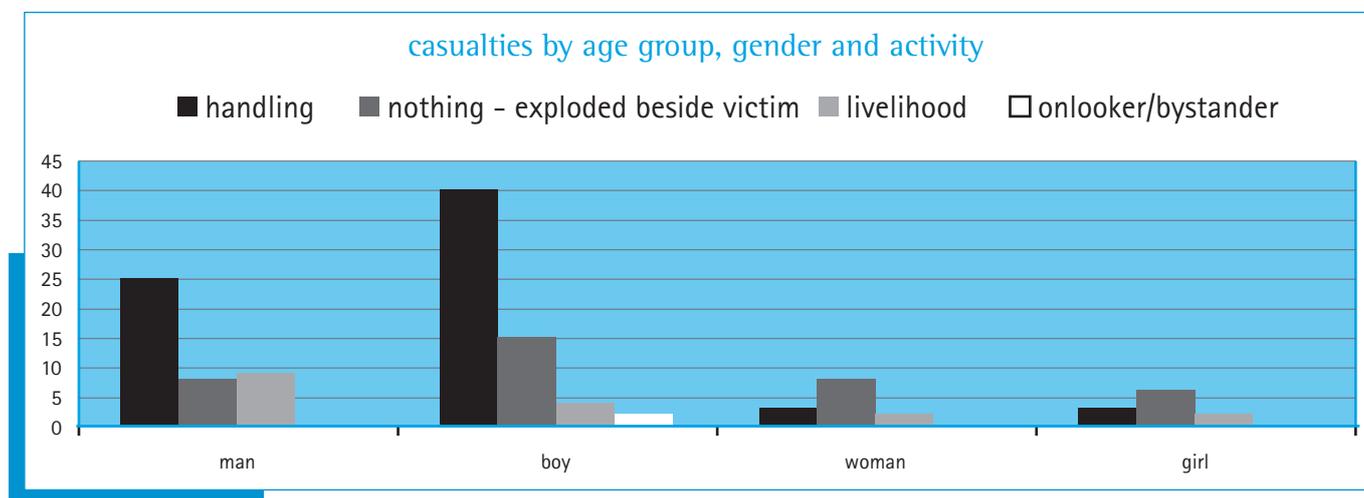
■ Returnees

Given regional trends, it is to be expected that in the first five years after the strikes (1973 to 1977) a great proportion of cluster submunitions casualties occurred, making post-strike returnees the greatest at-risk group over a 34-year post-conflict casualty period. As in neighboring Lao PDR and Vietnam, the loss of labor force and the burden of disability among returnees would have been significant.

■ People carrying out livelihood activities

The three main categories of activities leading to cluster submunitions casualties between 1998 and 2007 were: handling at 55.9 percent (71), followed by "nothing – exploded beside victim" at 29.1 percent (37), then farming at 7.1 percent (nine), and all other activity categories combined at 7.9 percent (10).

Based on 120 records with location details, cluster submunitions incidents occurred most in cultivated areas at 29.2 percent (35), followed by forests/ grazing land at 26.7 percent (32), then in/near villages at 25 percent (30), and in all other locations combined at 19.2 percent (23).

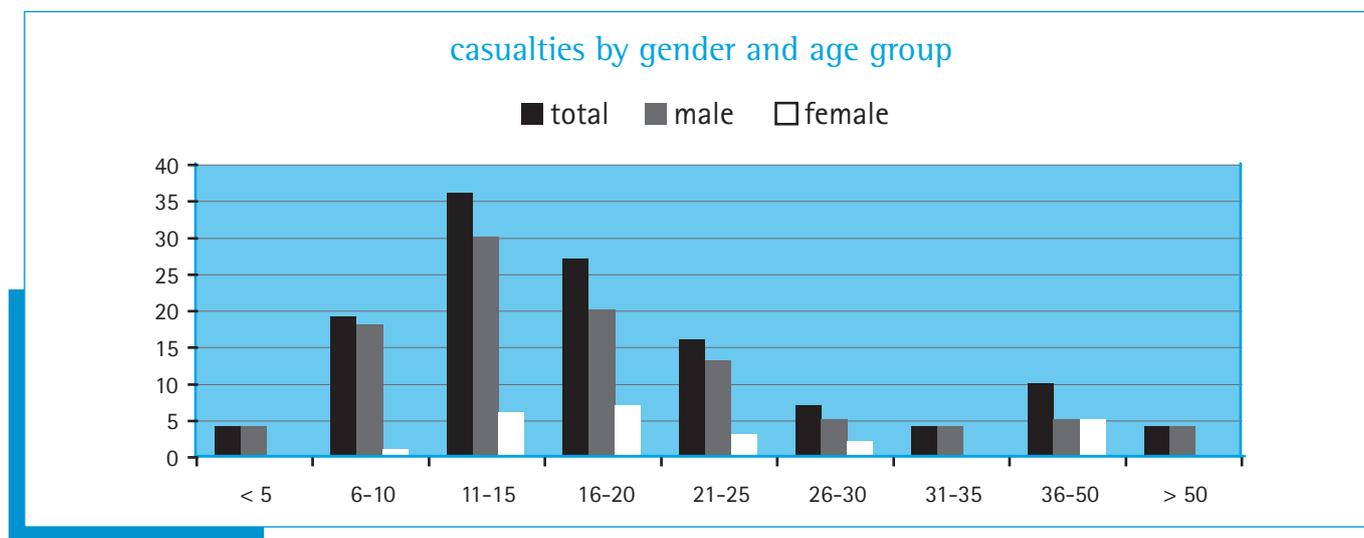


■ Males between five and 16

Analysis of available data for cluster submunitions casualties shows that males (103) are the largest risk group at 81.1 percent of all casualties, with 26 killed and 77 injured. Boys (61) accounted for 59 percent of all male casualties and 48 percent of total casualties. At 84.7 percent they were the vast majority of child casualties (72). The leading cause of casualties among boys was handling cluster submunitions at 65.6 percent (40).

Boys between the ages of six and 15 years old (48) are the most vulnerable to incidents involving cluster submunitions, representing 46.6 percent of male casualties and 37.8 percent of all casualties. Boys of that age were most vulnerable to handling cluster submunitions at 70.8 percent (34), and "nothing – exploded beside victim" at 18.8 percent (nine). They constitute nearly half of all handling casualties (47.9 percent).

Men were most likely to become casualties when handling cluster submunitions, at 59.5 percent (25) of all adult male casualties; followed by "nothing – exploded beside victim" at 19 percent (eight); followed by farming at 9.5 percent (four).



■ Females

Though a minority risk group, females were 18.9 percent (24) of all casualties, with three killed and 21 injured. Women accounted for 54.2 percent (13) and girls for 45.8 percent (11) of the female total. Of all female casualties, 58.3 percent (14) were engaged in the same activity, "nothing – exploded beside victim." Given the very low mortality rate among females and the high rate of girl casualties, it is likely that these incidents involved bystanding while others handled cluster submunitions.

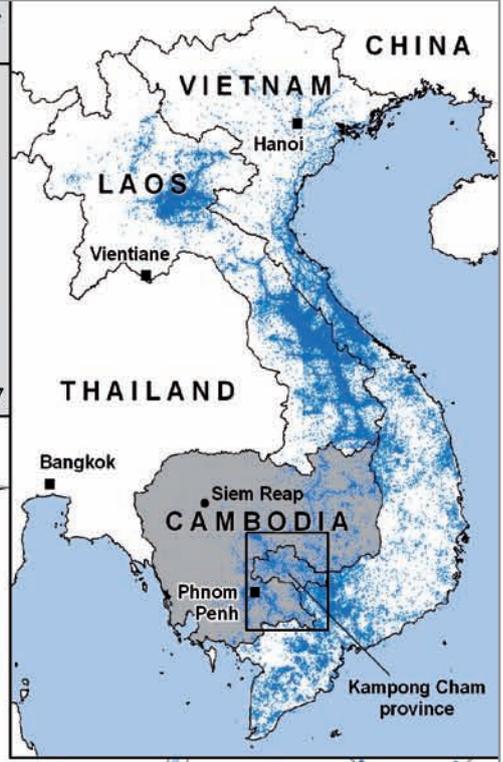
CAMBODIA Cluster munitions and casualties per district in Kampong Cham province

Legend

- Country boundary
- Province boundary
- Lake, large river
- Major road
- Province capital
- Large village (population > 2000)
- Cluster munitions strikes
- Casualties

Boundary representation is not authoritative
 Village population based on 1998 census
 Cluster munitions used by US from 1965 to 1975
 Cluster submunitions casualties from 2003 to 2006

1/04/2007

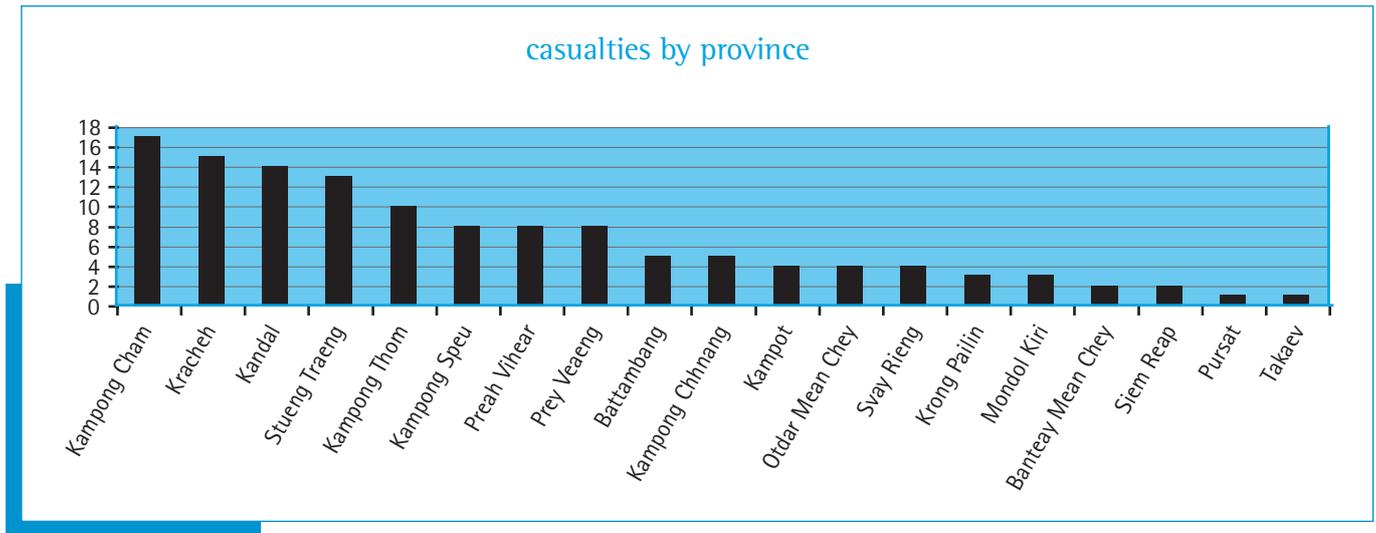


Major areas of impact

■ Unspecified targets

In total, 26 million cluster submunitions were delivered in 80,173 strikes on Cambodia. The three top provinces of Cambodia in order of numbers of cluster munitions dispensed are: Kaoh Kong at 18.8 percent (4.9 million); Kampong Cham at 18.4 percent (4.8 million); and Rotanak Kiri at 10.8 percent (2.8 million). Targeting data indicated that at least 7,633 (9.5 percent) of these strikes were against unknown, unspecified or unidentified targets, while the top target at 23,184 (28.9 percent) of these strikes was to "confirm enemy location" – not to strike a known and identified target.

Data for Cambodia showed that 26,868 strikes (33.5 percent) were made within one kilometer of villages, predominantly in rural agricultural areas: of those strikes, three percent (777) of the targets were unspecified or unidentified, with "confirm enemy location" the top target at 14,871 (55.3 percent), and then "troops in contact" at 5,661 (21 percent).³⁹



■ Cluster munitions and human security

Negative linkages between general ERW contamination and development and livelihood activities are evident from various sources. The National Poverty Reduction Strategy notes that mines/ERW create vulnerability in poverty-stricken rural areas where they "are the main obstacles to access by the poor to agricultural lands"⁴⁰ and adds that contamination was a particular issue for post-conflict returnees in some of the poorest provinces and a cause of poverty itself. Coordination of clearance efforts with poverty reduction efforts is part of the overall strategic objectives for the sector. At least 5,500 villages are contaminated with ERW, and clearance efforts were said to "significantly and concretely" contribute to reducing poverty by reducing the impact of new casualties on impoverished families.⁴¹

In the most recent Poverty Reduction Strategy Paper (PRSP) for Cambodia, among the key strategies to increase rural incomes were clearance activities making arable land safe for cultivation and preventing casualties among the poor. Goal 9 of the Country Millennium Development Goals (MDG) for Cambodia is mine/ERW clearance and victim assistance, an acknowledgement that contamination and a particularly high casualty rate are impeding progress in reaching the MDG.⁴²

The economic incentive to collect war waste puts the rural population at risk of encountering cluster submunitions during the excavation of scrap metal, utilization of existing areas, and preparation of newly cultivated ones. Contact with ERW is generally safer than with mines, as they do not detonate as readily. Intentional handling of ERW generally is common in Cambodia. Decades of conflict and familiarity with mines/ERW can make handling and dismantling of war remnants seem "normal." Studies on village demining, tampering, and scrap metal collection indicate that a fairly complex system of threat assessment occurs in deliberate engagement, particularly with regard to defusing devices.⁴³ Cluster submunitions are widely regarded as the least safe form of ERW to defuse and are generally feared more than other ERW – they are, however, attractive to children, as are ERW in general⁴⁴ and especially to boys, as evidenced by the preceding casualty data.

In a recent report on the significant drop in casualties in Cambodia, enforcement of laws regulating such activity and the cessation of cross-border scrap metal commerce were seen to play a role in the reduction.⁴⁵ Given that significant numbers of cluster submunitions casualties are generally involved in livelihood activities and that cluster submunitions behave more like mines than other ERW when disturbed, it remains to be seen whether improved economic conditions and restrictions on the scrap trade in Cambodia would thus have a significant impact on this population.

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives		✓	
2 Impact on resources		✓	
3 Impact on public sector		✓	
ST SUBTOTAL		6	
T TOTAL			6

Impact conclusion

Analysis of casualty demographics, activities and locations demonstrates that the primary impact of cluster submunitions contamination in Cambodia cannot be fully assessed. Certainly, there are more cluster submunitions casualties than is apparent from the limited data. This would be especially true for cluster submunitions-contaminated provinces such as Kampong Cham, which is one of the highest ERW casualty locales.⁴⁶

Though total cluster munitions use in Cambodia is less than in other countries of the region, proportionally similar daily hazards are posed with regard to safely accessing arable land and other areas where livelihood activities occur, particularly in the immediate vicinity of villages. The proportion of cluster munitions strikes in and near villages suggests that many more cluster submunitions casualties have yet to be identified in Cambodia. Given this, the limited number of files available for analysis, and the high rates of ERW casualties in many provinces, many people are likely to come in contact with cluster submunitions frequently, particularly boys.

Capacity to respond

The Cambodia Mine Action and Victim Assistance Authority (CMAA) coordinates Cambodia's mine action capacity, including risk education. It has delegated responsibility for victim assistance to the Ministry of Social Affairs, Veterans and Youth Rehabilitation and the Disability Action Council, which both lack capacity. Clearance is carried out by the Cambodian Mine Action Center (CMAC), international NGOs and by so-called village deminers. MRE includes ERW-specific risk education which is mostly integrated with clearance and explosive ordnance disposal (EOD) in areas prone to ERW casualties. However, it is not known to be specific to cluster submunitions. Risk-taking activities are mostly linked to survival, for example scrap metal trade. The lack of proper first aid for new casualties from rural areas leads to high death rates and most hospital services are fee-based. More than 30 organizations provide assistance to survivors and other people with disabilities. But, to adequately reach all people with a disability remains a serious challenge in Cambodia.⁴⁷

Recommendations

- A casualty survey in cluster submunitions-contaminated locales should be conducted to differentiate cluster submunitions casualties from other ERW casualties and determine the extent of human impact.
- Based on air combat data, identification of areas where cluster submunitions contamination could be problematic should be correlated with casualty data collection for monitoring of probable "hotspots."
- Prioritization of the most vulnerable demographic group, boys aged six to 15, in ERW and cluster submunitions-contaminated areas for specific MRE actions.
- Build national victim assistance capacity integrated with community development and poverty reduction initiatives to assure needed assistance to victims and their families, especially in cases of disability.

Community experience

Many villages, fields and parts of the jungle in eastern provinces of Cambodia, such as Kampong Thom, Kampong Cham, Ratanak Kiri, and Mondul Kiri, are heavily contaminated with cluster submunitions known as bomblets by local people. The most commonly found cluster submunitions are BLU-26 and BLU-61. Their presence often results in a persistent sense of insecurity and fear and makes it extremely risky for people to access resources such as agricultural land and water or to attend school. Some people deliberately handle unexploded cluster submunitions to move them out of the way for the protection of community members or to extract scrap metal and explosives for sale.

A CMVIS data gatherer relates the story of an interview with a family in Kampong Thom province whose main breadwinner was injured by a cluster submunition. Sam Noeun, 25, the head of a poor family of four, lives in Thmei village, Sandan district. Sam Noeun needs to clear forest lands to grow crops to provide for his wife and their two children. On 5 February 2007, he walked about five kilometers from his village to an area locally called Ang Krot to clear land with two other colleagues, a 28-year-old woman named Kong My and a 17-year-old boy named Yean Ham.

In the afternoon, Sam Noeun was hit by an unexploded cluster submunition on the surface near some bushes; it exploded immediately. Sam Noeun and Yean Ham were seriously injured and were evacuated from the incident location to the provincial hospital about 60 kilometers away. Kong My, whose injuries were less severe, was taken to her village and was treated at the local health post.

When shown photos during the interview, the casualties identified the device causing the incident as a possible BLU-61 cluster submunition. These were allegedly dropped on a hidden Vietnamese military base there in the 1970s. Usually, scrap metal collectors detect and destroy these types of munitions by burning them.

Between January 2000 and February 2007, 29 people were killed or injured by mines/ERW in Sandan district. Of the 29 casualties, 27 were caused by ERW, including six cluster submunition casualties. These incidents, as well as their severity, led CMVIS to carry out small-scale mine risk education (MRE).



LAO PEOPLE'S DEMOCRATIC REPUBLIC



Key findings

- Handling cluster submunitions was the leading activity among casualties, at 34.6 percent.
- Boys in the six to 15 year old age group are 23.1 percent of all cluster submunitions casualties and were 41.9 percent of defusing casualties.
- Over 52.8 million cluster submunitions fell within one kilometer of villages.

Country indicators⁴⁸

GDP (purchasing power parity): US\$13.43 billion (2006 est.)

GDP - per capita (PPP): US\$2,100 (2006 est.)

GDP - composition by sector: (2006 est.)

- *agriculture:* 43.4 percent
- *industry:* 30.6 percent
- *services:* 26 percent

Labor force - by occupation: 2.1 million (2006 est.)

- *agriculture:* 80 percent
- *industry and services:* 20 percent (2005 est.)

Unemployment rate: 2.4 percent (2005 est.)

HDI: 0.553, Lao PDR is ranked 133rd out of 177 countries in the low human development group.⁴⁹

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 36. Lao PDR is ranked 63rd out of 102 developing countries.⁵⁰

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used in vast quantities by the US from 1965 to 1973.⁵¹

Cluster submunitions used: BLU-3, 7, 18, 24/66, 26/36/59, 61, 63/86, 77, and Mk118 (Rockeye).⁵²

Number of cluster submunitions used: At least 260 million cluster submunitions were delivered in 414,920 cluster bombs dispensed by over 181,000

aircraft; of the confirmed total the BLU-26 was the most common at 70.2 percent (182.5 million).

Contamination estimate: At least 13 to 78 million submunitions remained unexploded upon impact. Cluster submunitions accounted for 45.6 percent (336,031) of all ERW located and destroyed by the Lao National UXO Program (UXO Lao) from 1996 to December 2006.⁵³

Failure rate estimate: Official failure rates for most cluster submunitions used in the period were five to 10 percent. However, the BLU-26 was known to have a test failure rate of 26 percent, and would likely have a minimum failure rate of 30 percent and a maximum failure rate of possibly as high as 50 percent on the ground.

Number of recorded casualties: Complete casualty data is not available due to a lack of active casualty data collection nationwide; however, at least 4,837 casualties were confirmed, with 2,531 killed, 2,179 injured, and 127 of unknown status as of March 2007.

Estimated casualties: Extrapolations based on averaged annual cluster submunitions casualty rates and underreporting estimates by official sources lead to an estimated total of 6,620. This does not include casualties during cluster munitions strikes. Given the level of cluster munitions use in Lao PDR, a significant proportion of conflict casualties were certainly due to cluster submunitions.

Human impact measure

Casualty data analysis

	Confirmed casualties: 1965-2007			
	Total	Strike	Post-strike	Post-conflict
Grand total	4,837	N/A	1,948	2,889
Injured	2,179		790	1,389
Killed	2,531		1,090	1,441
Unknown status	127		68	59
Man	2,293		1,050	1,243
Woman	471		221	250
Boy	1,670		519	1,151
Girl	279		86	193
Military	0		0	0
Deminer	0		0	0
Unknown	124		72	52
Dominant activities	Touching (1,520), digging (1,157), and burning (807)			
Dominant location	Cultivated areas (1,757), in/near the village (1,712)			

In total, 4,837 cluster submunitions casualties were recorded from 1965 to 2007: 2,531 killed, 2,179 injured, and 127 whose status was unknown.⁵⁴ Although data collection in Lao PDR remains incomplete the National Regulatory Authority (NRA) has taken steps to realize its mandate to develop and maintain a national casualty surveillance system,⁵⁵ and has begun the

process by establishing a Technical Working Group and hiring a Technical Adviser for Victim Assistance. A national survey to determine the extent of all casualties of explosive incidents for the period 1964 to date is planned for late 2007 implementation.⁵⁶

In total, 11,663 landmine/ERW casualty records were available for analysis. The Handicap International (HI) impact survey database contains 10,639 casualty records for 1951 to 1997. Of these, 4,436 (41.7 percent) casualties were caused by cluster submunitions; 3,429 (32.2 percent) by all other ERW; 1,166 (11 percent) by mines; and 1,608 (15.1 percent) were unknown or unspecified device types. The HI survey also identified an additional 1,279 who were not interviewed for a total of 11,918 reported casualties.⁵⁷ The UXO Lao data contains 1,024 casualty records from 1997 to March 2007, of which 402 (39.3 percent) were caused by cluster submunitions, 365 (35.6 percent) by all other ERW, 10 (one percent) by mines, and 247 (24.1 percent) were unknown device types.⁵⁸

Of those total records, 4,391 are complete and detail outcome, age, gender, activity, and location information for cluster submunitions casualties. There were 9,808 detailed records for all casualties where the device type was known. Analysis is based on the highest total of complete records.

There are an estimated 6,620 casualties due to unexploded cluster submunitions in the aftermath of the war. Considering that cluster submunitions casualties account for an average of 42 percent of casualties where the device type is known prior to 1997, this would be an additional 537 casualties. Between 1997 and 2007, this ratio was 51.5 percent, leading to an additional 831 casualties. The NRA estimates a 50 percent nationwide underreporting of mine/ERW casualties between 1997 and 2007, for an additional 415 casualties.

In the HI national survey, 49 percent of 10,639 casualties with detailed records indicated that more than one person was involved in the incident (5,168). Cluster submunitions accounted for 43 percent (2,229) of multiple casualty incidents, with all other ERW combined at 47 percent (2,442), and mines at 10 percent (497).

Cluster submunitions alone accounted for 40 percent (1,815) of those injured (4,525) and led to the greatest proportion of multiple injuries amongst all other casualties, constituting 64 percent (706) of 1,109 total multiple injuries. Among all survivors, 68 percent (3,060) had amputations and three percent (143) were multiple amputees: cluster submunitions survivors were 40 percent (1,211) of amputees and 43 percent (61) of multiple amputees.⁵⁹

When correlating cluster submunitions contamination and casualty density, Savannakhet accounted for 71.6 percent (1,240) of all cluster submunitions casualties between 1965 and 2007: 654 were killed, 586 injured. There were 516 incidents causing multiple casualties (41.6 percent of the national total), 369 people needed amputations (29.8 percent) and 550 casualties were married with children (44.4 percent). Men were the majority of casualties at 53.3 percent (661). Boys were 34.7 percent (430) of casualties, women 8.2 percent (102) and girls 3.8 percent (47). Handling was the dominant activity leading to casualties at 38.1 percent (473 casualties), followed by burning at 22.2 percent (275), then digging at 19 percent (235) and all other activities at 20.7 percent (257). Cluster submunitions casualties were most likely to occur in cultivated areas at 43.6 percent (541), followed by in or near the village at 38.9 percent (482), with all other locations at 17.5 percent (217). Children were 38.5 percent (477) of the total, with the majority (53.7 percent) killed.

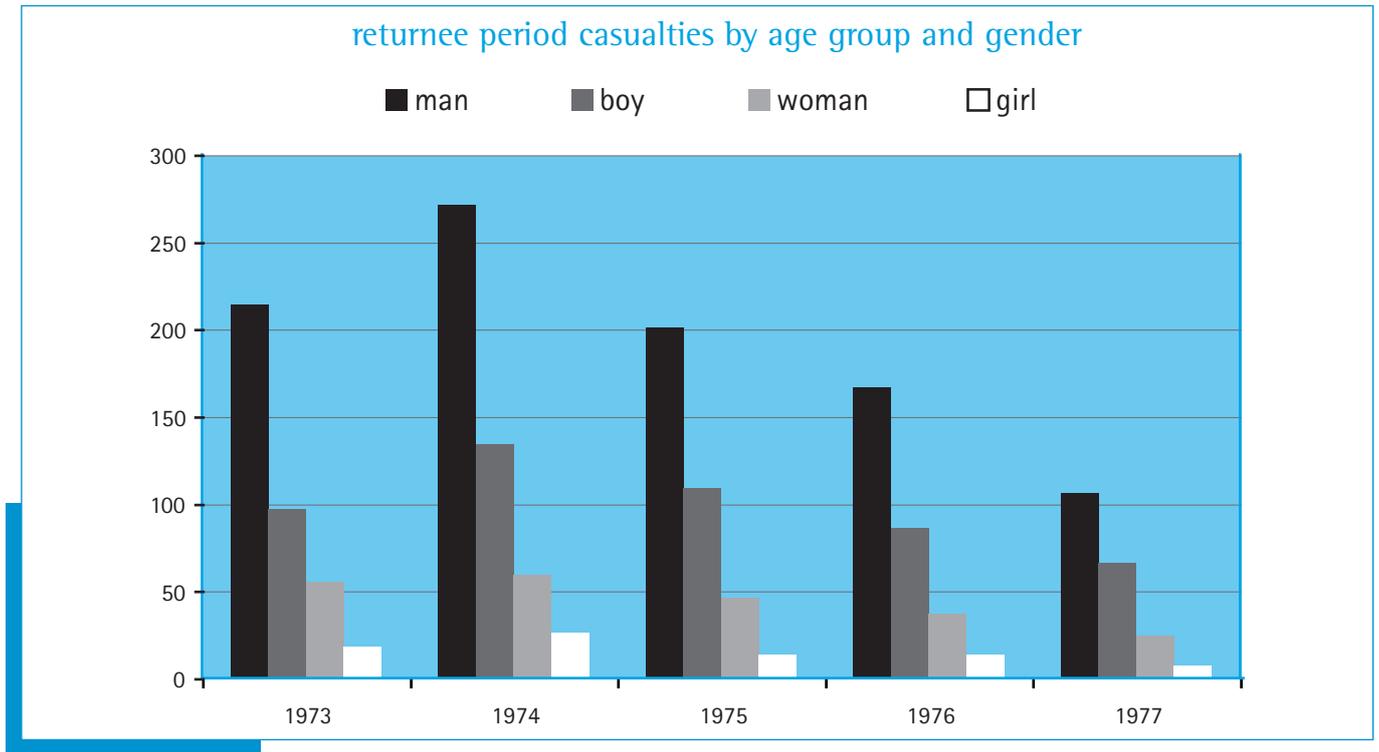
Most impacted groups

Returnees

In the first five years after the war (1973 to 1977), 40.3 percent (1,948) of cluster submunitions casualties occurred, making post-strike returnees the greatest at-risk group over a 34-year post-conflict casualty period. During this period, on average 52.5 percent of landmine/ERW casualties were attributed to cluster submunitions.

Multiple casualty incidents of the period were reported by 41.1 percent (801) of all cluster submunitions casualties. The rate of amputees was also high, accounting for 28.3 percent (552) of all casualties during the post-strike period. Additionally, 851 of cluster submunitions casualties were married with children.

In 1974, 484 cluster submunitions casualties occurred – 281 killed and 203 injured – making it the single worst year for cluster submunitions casualties. About 40 persons became casualties each month nationwide. Children were 33 percent (160) of the total, with the majority (93 or 58.1 percent) killed.



People carrying out livelihood activities

In 2004, a case study in Kaleum District of Sekong province summed up the long-term impact of ERW: “Apart from causing fear, injury, and death, this has also stunted socioeconomic development. Digging, clearing undergrowth or making a fire all become potentially lethal activities. For an essentially agricultural economy, having more than half [the] land mass contaminated by UXO is a crippling development handicap preventing farmers from using arable land and limiting expansion into new agricultural areas. UXO are also a major impediment to the construction of infrastructure and to economic development projects that Lao PDR urgently needs.”⁶⁰

The three main categories of activities leading to cluster submunitions casualties between 1965 and 2007 were: touching at 34.6 percent (1,520); followed by digging at 26.3 percent (1,157); then burning at 18.4 percent (807).

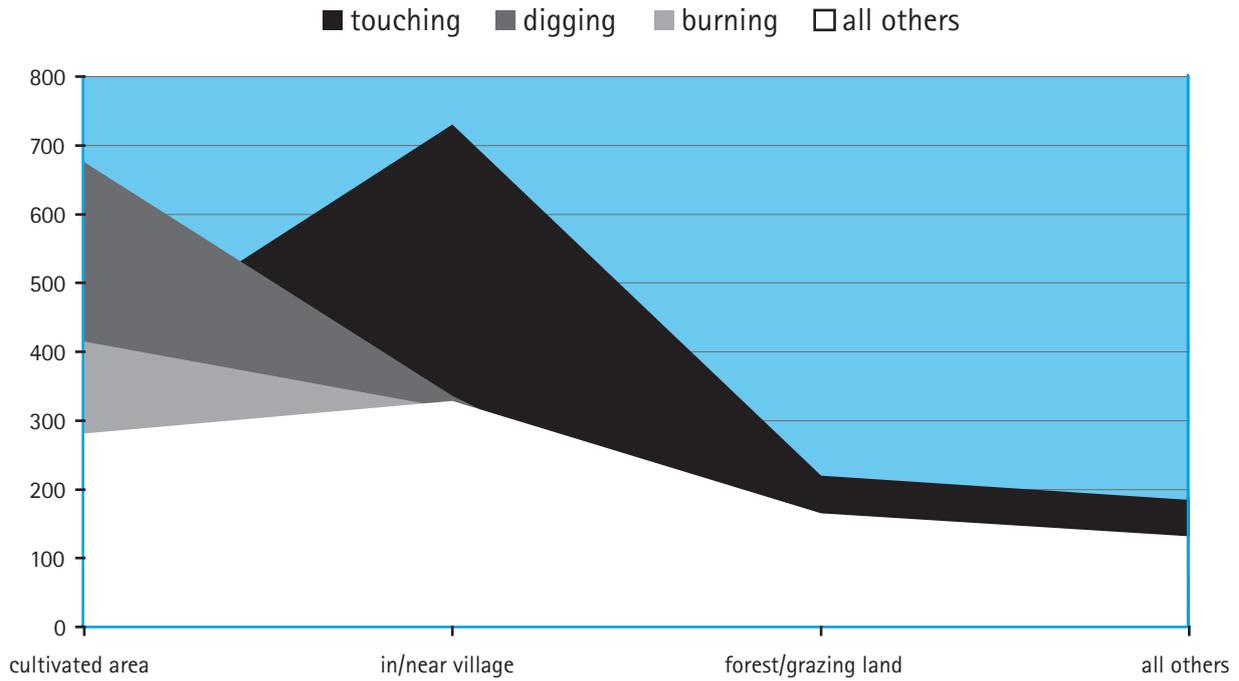
Closer examination of the specific activities among the three main categories shows that among touching incidents, playing with cluster submunitions resulted in 42.2 percent (642) of casualties, followed by defusing at 37.2 percent (565).

Digging incidents were led by weeding crops at 39.1 percent (452), followed by plowing and sowing new crops at 25 percent (289).

Among burning incidents, most casualties occurred by clearing a field for cultivation at 48.3 percent (390), followed by burning garbage at 34.6 percent (279).

During the period examined, the dominant locations where cluster submunitions incidents occurred were cultivated areas at 40 percent (1,757); followed by in/near villages at 39 percent (1,712); then forests/grazing land at 11.5 percent (506); and all other locations combined at 9.5 percent (416).

correlation of dominant activities and locations



■ Males

Analysis of available data for cluster submunitions casualties shows that males are the largest risk group at 84.1 percent (3,695) of all casualties with 2,020 killed and 1,675 injured. Men accounted for 56.9 percent (2,103) and boys 43.1 percent (1,592) respectively of all male casualties. Boys represented 86 percent of 1,851 child casualties (with full details).

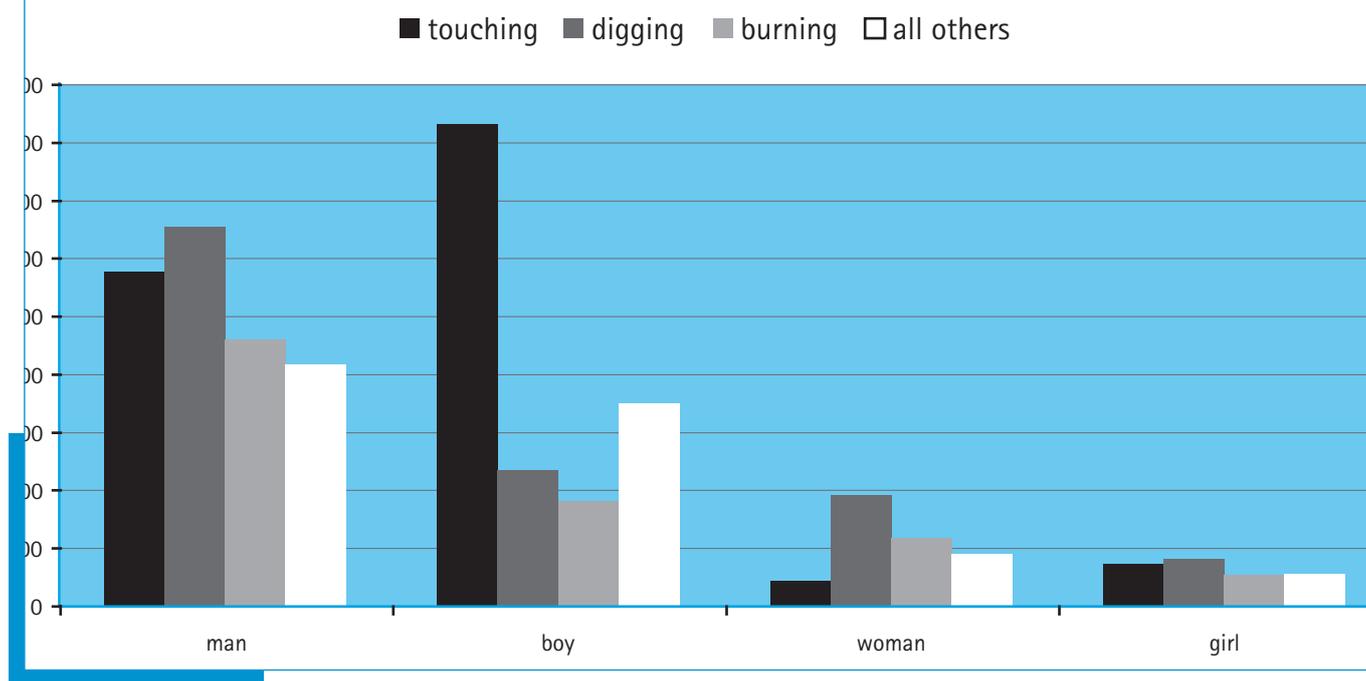
The leading cause of casualties among 830 boys who handled cluster submunitions was playing with and then defusing them at 58.6 percent (486) and 28.5 percent (237) respectively. They constituted 41.9 percent of a total of 565 defusing casualties.

Boys between the ages of six and 15 years old (1,122) are the most vulnerable to incidents involving cluster submunitions, representing 23.1 percent of all casualties. Boys of that age were most vulnerable to playing with cluster submunitions at 38.4 percent (431), and defusing at 7.9 percent (89).

Men were most likely to become casualties when digging at 31.1 percent (653) of all adult male casualties, then by handling cluster submunitions at 27.4 percent (576), followed by burning at 21.8 percent (458).

Intentional handling of ERW generally and cluster submunitions specifically is common in Lao PDR. Meanwhile, the economic incentives of war waste, coupled with the need to use all the limited arable land for subsistence,⁶¹ put the rural population at risk of encountering cluster submunitions during excavation of scrap, utilization of existing and preparation of newly cultivated areas. The extent of contamination with clustersubmunitions is considered to be so great that clearance will take several generations.⁶²

gender, age group and dominant activities



■ Females

Though a minority risk group, females were 15.9 percent (696) of all casualties, with 336 killed and 360 injured. Women accounted for 62.8 percent (437) and girls for 37.2 percent (259) of the female total. Notable in this minority group is the type of activities and involving females, while digging was 38.9 percent (271) and burning was 24.3 percent (169), handling incidents were at 16.4 percent (114). Girls constituted 63.2 percent (72) of female handling casualties.

Cluster submunitions caused more casualties among females than any other known device type. Of a total 1,285 female casualties, 54.1 percent (696) were caused by cluster submunitions, compared with 30.5 percent (392) by other ERW and 15.3 percent (197) by mines.

LAO PDR

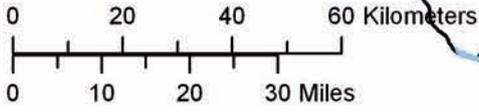
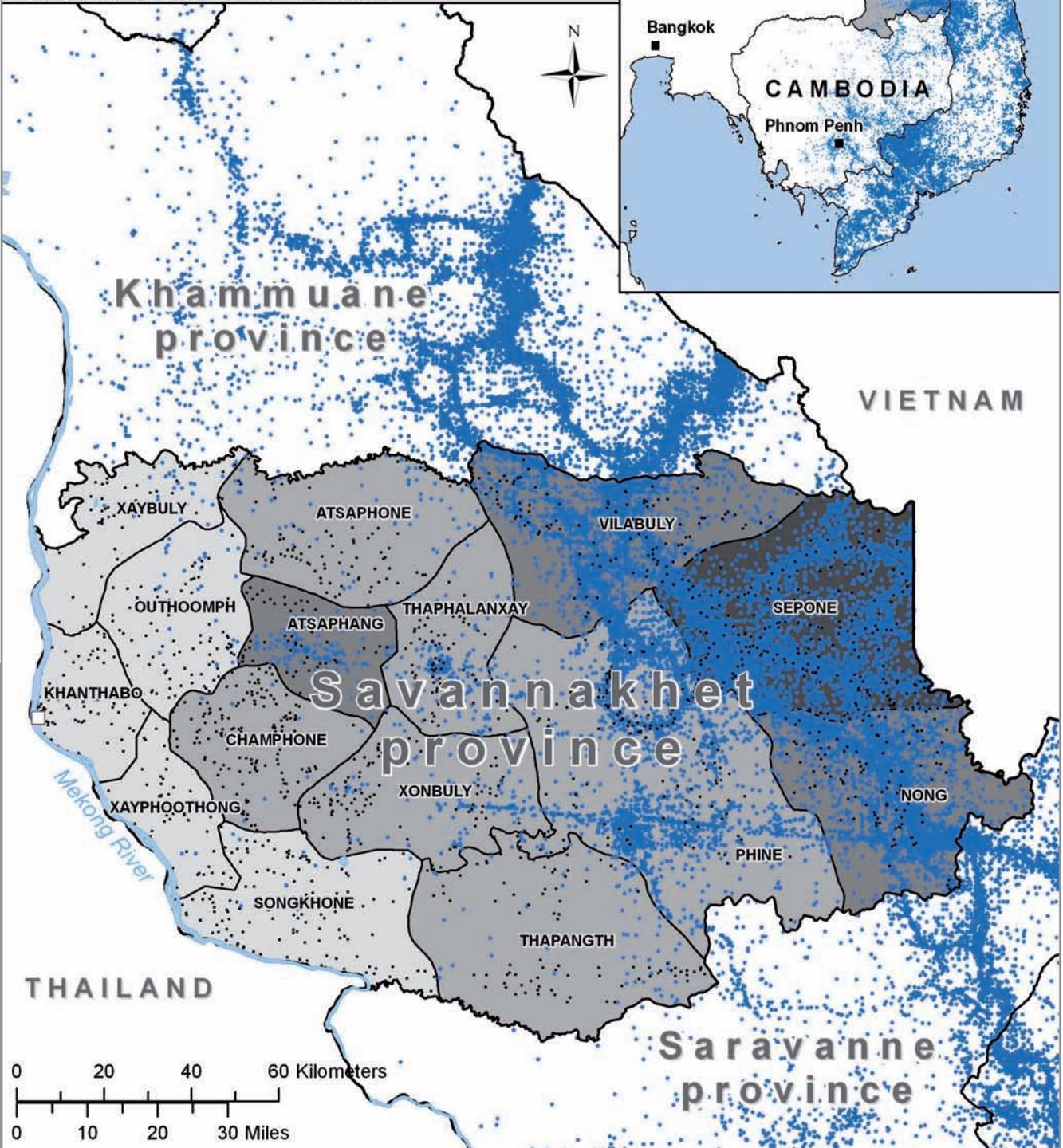
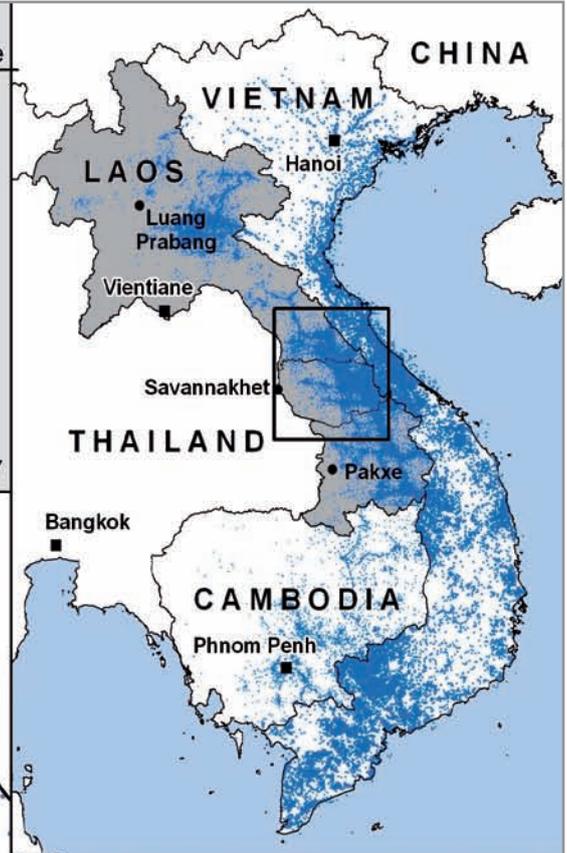
Cluster munitions and casualties per district in Savannakhet province

Legend

- | | |
|---|--|
|  Country boundary | Casualties per district |
|  Province boundary |  No casualties reported |
|  Province capital |  1 - 150 casualties |
|  Village |  151 - 300 casualties |
|  Cluster munitions strikes |  301 - 399 casualties |

Boundary representation is not authoritative
 Cluster munitions used by US from 1965 to 1973
 Cluster submunitions casualties from 1965 to 2007

1/04/2007



Major areas of impact

■ Unspecified targets

In total, 260 million cluster submunitions were dispensed over Lao PDR. The three top provinces of Lao PDR in order of numbers of cluster submunitions dispensed are: Savannakhet at 34.5 percent (89.6 million); Khammouane at 23.7 percent (61.5 million); and Xieng Khoang at 16.4 percent (42.6 million). Targeting data indicated that 16.4 percent (42.6 million) cluster munitions were delivered against unknown, unspecified or unidentified targets, with "trucks" at 15.6 percent (40.4 million) and "motor vehicle" at 10.1 percent (26.2 million).⁶³

Data for Lao PDR showed that 52.8 million cluster submunitions were delivered within one kilometer of villages, overwhelmingly in remote, rural agricultural areas where arable land is scarce, particularly in the uplands and highlands: 72.6 percent (38.3 million) were the failure-prone BLU-26. Of the 22,567 confirmed strikes, 10.8 percent (2,442) of the targets were unknown, unspecified or unidentified. "Motor vehicles" are the top target at 15.3 percent (3,456), then "trucks" at 12.5 percent (2,719), and "area/depot" at 10.3 percent (2,313).⁶⁴

■ Cluster munitions and human security

Negative linkages between ERW contamination generally and development and livelihood activities are evident from varied sources. It was noted that 2,861 villages in Lao PDR (25 percent) report continued landmine/ERW contamination in 15 of 17 provinces, 10 of which are considered "severely" and another five "significantly" impacted. According to the National Socio-Economic Development Plan (2006–2010), mine/ERW contamination threatens the physical safety, livelihoods and food security of these villages.⁶⁵ Additionally, the high incidence of contamination links with high levels of poverty, primarily in the uplands and highlands. Members of poor rural communities were considered vulnerable not only to encounters during farming and other subsistence activities, but to the economic lure of scrap metal collection and tampering.⁶⁶ Therefore, clearance of agricultural land remained at the top of the clearance priority list in order to increase food production and for development of other sectors.⁶⁷ Clearance is seen as a means of increasing social and economic opportunities in the 17 poorest districts in Lao PDR.⁶⁸

The National Poverty Eradication Program specifies the need for a cross-sector approach that integrates mine/ERW clearance with development, and cites land use issues, such as irrigation, as a major cause of poverty, with contamination as a contributing factor. While some of the poorest villages have benefited from improved irrigation and mine/ERW clearance, development in many others has been hampered by contamination, preventing cultivation. An estimated 50 percent of the arable land in Lao PDR is impacted by ERW, including not only cultivated crops but also animal husbandry and food and firewood collection. Other direct impacts of ERW were considered to be: inhibited movement, delays in infrastructure projects, and that contamination "generally undermines social and development activities."⁶⁹

The Poverty Reduction Fund (PRF) cited landmine/ERW contamination as a basic cause of poverty, noting that the community contribution to projects in Savannakhet was lower than in other provinces and hypothesizing that the proximity of these districts to mine/ERW areas could be the root cause.⁷⁰

Mines/ERW generally impact road construction and other infrastructure projects, as well as commercial endeavors such as the Lanxang Mineral and Phoubia Mining operations.⁷¹ Progress reports for the Nam Theun 2 hydroelectric dam indicate that BLU submunitions clearance activities are required not only for areas of the construction site, but also for downstream channeling, road works, and power lines. A system of ERW reporting was necessary in addition to safety procedures for the hundreds of workers on-site and risk education for locals in the area, since many came there to work as day labor.⁷²

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives			✓
2 Impact on resources			✓
3 Impact on public sector			✓
ST SUBTOTAL			6
T TOTAL			9

Impact conclusion

Human impact of cluster submunitions in Lao PDR is considered to be very high due to the rate of immediate post-strike and post-conflict casualties and the persistence of high cluster submunitions contamination and casualties over decades. The daily hazards posed to safely accessing the limited arable land and other areas where livelihood activities occur in the immediate vicinity of villages have a demonstrably negative impact on communities and development activities.

Capacity to respond

The NRA coordinates all "UXO action" projects, including risk education and victim assistance. UXO Lao and international NGOs carry out clearance operations. Mine/ERW risk education includes specific cluster submunitions risk education, but is not sufficiently linked with Explosive Ordnance Disposal (EOD) or static clearance efforts. Risk-taking activities are mostly linked to survival; particularly worrying is the intensive scrap metal trade. Safer digging practices have long been a part of community awareness (MRE) messages.⁷³ Immediate first aid for new casualties from remote rural areas is often not available, but improvements in existing healthcare are said to have led to a decreased mortality rate. Community- and center-based rehabilitation projects face challenges reaching all people with disabilities in Lao.⁷⁴

Recommendations

- More actors are needed in the victim assistance sector to implement programs that also focus on the household and the community as victims.
- Stronger linkages between poverty reduction infrastructure and community development programs are needed to ensure inclusion of survivor households in implementing their projects, with particular attention to widowed mothers with children and homes with persons with disability.
- Deployment of the nationwide casualty surveillance system should provide timely collection and dissemination of new casualty data to ensure a quick response to "hotspots" by both EOD, mine risk, and survivor assistance providers.

Community experience

This woman is 33 years old and married with four children. She lives in Villabury district, Savannakhet province. She earns a living as a rice farmer. In February 2006, she and six other people were sitting around a fire because it was still chilly. The fire was built in a place where they had made a fire many times before. All of a sudden, a hidden cluster submunition exploded, giving her severe shrapnel injuries in the waist area.



Within 25 minutes she was transported to the nearest local health care post, where she received only minor treatment. She was advised to go to the district hospital for specialized care, but her husband said they could not afford this and they went back to the village. However, she continued to bleed, and eventually they had to go to the district hospital, almost 1.5 hours away. By that time she could not be treated there either and had to move on to the inter-district hospital, which was again one hour of travel in a private car. She was treated there, but the remaining shrapnel can only be removed at the better-equipped provincial hospital. The family does not have the resources for this and she still feels pain in her waist when she walks or sits. Her eyes and ears are still affected as well, and she feels nervous and scared when making fires.

The total cost of treatment was 500,000 Lao Kip (KAP, US\$55) and the inter-district hospital provided 150,000 KAP (US\$16) for transportation.

Community experience

This man is a 25-year-old rice farmer from Sepon District, Savannakhet province; he is married and has one child. In March 2005, while he was cutting trees to clear a rice paddy about three kilometers from the village, his shovel hit an unexploded cluster submunition. He lost consciousness for a while and had severe lower arm and eye injuries. Villagers found him and once he gained consciousness again, he was transported in a hammock to the inter-district hospital three hours away as there was no local health center. Some of the way he even walked.

At the inter-district hospital, emergency care was given but further treatment at the provincial hospital was needed. It took the ambulance three hours to get there, and upon arrival his lower forearm was amputated immediately.

He lost his hearing, his sight in his right eye, and is in constant pain due to the amputation. Without more surgery he cannot wear a prosthesis. He is unable to work, which forces his wife to work in the rice field while he looks after their child. He is also feeling depressed and has difficulties eating.

The total cost of his treatment was 2,700,000 KAP (nearly US\$300) so far and he has no knowledge of any support programs.



VIETNAM



Key findings

- By gender and age group, boys between six and 15 years old are the most vulnerable population group, at 23.9 percent of all cluster submunitions casualties.
- Ethnic minorities were 14.6 percent of all cluster submunitions casualties, but only 7.9 percent of the population.
- By 1975, 294 cluster munitions had been delivered per square kilometer in Vietnam. This is about two cluster submunitions per person.

Country indicators⁷⁵

GDP (purchasing power parity): US\$258.6 billion (2006 est.)

GDP - per capita (PPP): US\$3,100 (2006 est.)

GDP - composition by sector: (2006 est.)

- agriculture: 20.1 percent
- industry: 41.8 percent
- services: 38.1 percent

Labor force - by occupation: 44.58 million (2006 est.)

- agriculture: 56.8 percent
- industry: 37 percent
- services: 6.2 percent (July 2005)

Unemployment rate: two percent (2006 est.)

HDI: 0.709, Vietnam is ranked 109th out of 177 countries in the low human development group.⁷⁶

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 15.7. Vietnam is ranked 33rd out of 102 developing countries.⁷⁷ Approximately 19 percent of the population lives under the poverty line.

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by the US from 1965 to 1975 during the conflict in Vietnam.

Cluster submunitions used: Air-delivered submunitions used include BLU-3, 7, 18, 24/66, 26/36/59, 61, 63/86, 77, and Mk118 (Rockeye). Artillery-delivered cluster munitions were also used in three provinces.⁷⁸

Number of cluster submunitions used: At least 96.9 million antipersonnel and antimaterial cluster submunitions were delivered in 296,680 cluster munitions dispensed by 80,213 aircraft. The Mk118 submunitions were most common at 45.4 percent (44 million), followed by the BLU-26 series (26/36/59) at 32.7 percent (31.7 million).

Contamination estimate: Using a minimum failure rate of five percent and a maximum one of 30 percent, there would have been between 4.9 and 29.1 million unexploded cluster submunitions. All provinces and all five major municipalities (Can Tho, Da Nang, Hai Phong, Hanoi, and Ho Chi Minh) were targeted with cluster munitions.⁷⁹

Failure rate estimate: Official failure rates for most cluster submunitions used in the period were five to 10 percent. However, the BLU-26 was known to have a test failure rate of 26 percent, and would likely have a minimum failure rate of 30 percent and a maximum failure rate of possibly as high as 50 percent on the ground.

Number of recorded casualties: Complete casualty data is not available due to lack of nationwide casualty data collection. However, at least 2,080 casualties were confirmed as of March 2007.

Estimated casualties: There are likely at least 34,550 to 52,350 post-conflict cluster submunitions casualties.⁸⁰ An estimated 4 million civilians and 1.5 million military died during the conflict.⁸¹ Based on the extent of cluster munitions use, a significant portion of those casualties certainly occurred during cluster munitions strikes.

Human impact measure

Casualty data analysis

Confirmed casualties: 1973–2007				
	Total	Strike	Post-strike	Post-conflict
Grand total	2,080	N/A	829	1,251
Injured	1,030		542	488
Killed	610		287	323
Unknown status	440		0	440
Man	682		353	329
Woman	215		182	33
Boy	620		236	384
Girl	102		50	52
Military	1			1
Deminer				
Unknown	460		8	452
Dominant activities	Farming, herding and digging: 919			
Dominant location	Cultivated/grazing land: 799			

In total, 2,080 cluster submunitions casualties were recorded from 1973⁸² to 2007, primarily in Quang Tri province, where passive casualty data collection of new incidents is conducted by Project RENEW and Clear Path International (CPI). They recorded 610 people killed, 1,030 injured,⁸³ and 440 with unknown status. At least one was military clearance personnel.⁸⁴

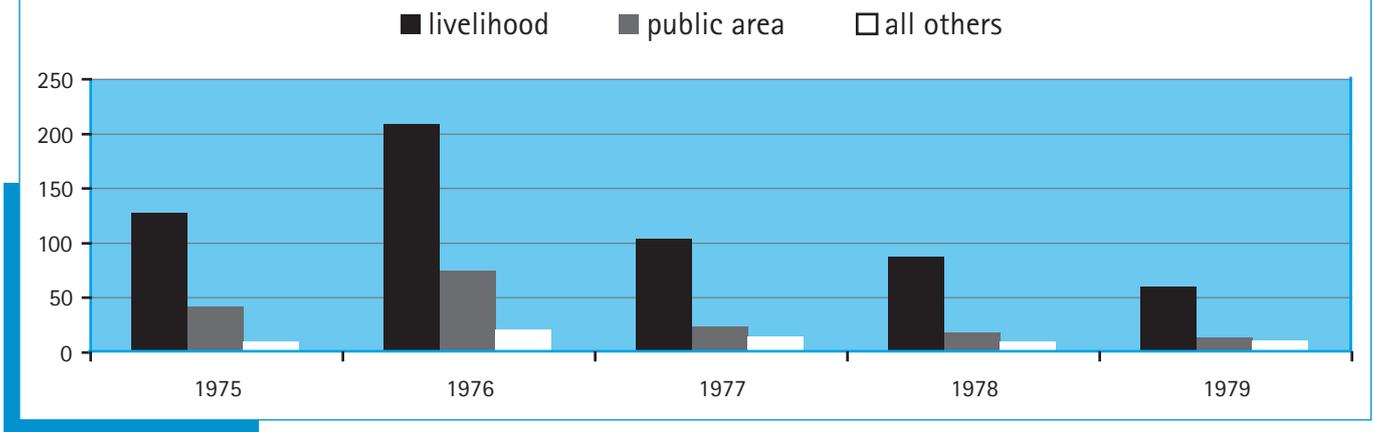
In total, 7,332 landmine/ERW casualty records were available for analysis. The Project RENEW database contains 6,928 casualty records for Quang Tri province from 1975–2005, of which 1,534 (22.1 percent) were caused by cluster submunitions, 1,576 (22.8 percent) by all other ERW, 348 (five percent) by mines, and 3,470 (50.1 percent) were unknown or unspecified device types.⁸⁵ CPI provided data for an additional 404 mine/ERW casualties from several provinces for the period 2001 to 2007, of which 106 (26.2 percent) were caused by cluster submunitions, 160 (39.6 percent) by all other ERW, nine (2.2 percent) by mines, and 129 (31.9 percent) were unknown device types.⁸⁶

In total, there were 1,640 detailed records of cluster submunitions casualties, of which 1,543 were for Quang Tri province. Of those, 1,504 were complete records detailing outcome, age, gender, activity and location information for cluster submunitions casualties. The total detailed casualty records added up to 6,745 files and 3,374 for all casualties where the device type was known. Analysis is based on the highest total of complete records.

An additional 440 cluster submunitions casualties of unknown outcome, age, gender, activity and location were recorded between 1973 and 2000 in A Luoi district, Thua-Thien Hue province, and could therefore not be used for analysis purposes.⁸⁷

Analysis of all detailed data for Quang Tri province shows that cluster submunitions caused 44.6 percent of recorded casualties where the item was known from 1975 to 2007 (1504 of 3,374 records). Between 1975 and 1979 cluster submunitions caused 54.1 (809 of 1,494) of known item incidents in Quang Tri. Extrapolation based on known device type rates would lead to a total of 3,372 cluster submunitions casualties between 1975 and 2007 in Quang Tri alone.⁸⁸

returnee period casualties by dominant location



Most impacted groups⁸⁹

■ Returnees

Based on records with complete details for Quang Tri, in the first five years after the war (1975–1979), 49.6 percent (3,348 of 6,745) of mine/ERW casualties occurred. During the same period, 52.4 percent (809 of 1,543) of all cluster submunitions casualties occurred, making post-conflict returnees the greatest at-risk group over a 32-year casualty period. The dramatic spike in casualties occurred in the immediate aftermath of conflict, as the population returned to their homes and to normal daily activities. On average 53.8 percent (809 of 1,504) of all known device type casualties were attributed to cluster submunitions. Extrapolation of total casualties based on the averages for known device types would result in 1,678 submunitions casualties for the 1975 to 1979 period.

This would cause socio-economic hardship in terms of loss of labor force and the burden of disability among those attempting to resettle their families after the war. Incidents occurred in livelihood areas such as cultivated land, grassland, forest and other such areas that people rely upon for their income and subsistence, or in or near peoples' homes and schools.

The single worst year for cluster submunitions casualties in Quang Tri was 1976, with 301 casualties (105 killed, 196 injured). This means about 25 persons per month. The year 1976 makes up 20 percent of all recorded cluster submunitions casualties for the province. This is twice as much as in Savannakhet (Lao PDR) where there were about 13 new cluster submunitions casualties per month during the post-strike phase.⁹⁰ This phenomenon is likely the result of the difference in population densities for the two provinces and levels of post-conflict population movement, despite the fact that Quang Tri received only 18 percent (12.8 million) of the cluster munitions (71.3 million) dispensed in Savannakhet.

■ People carrying out livelihood activities

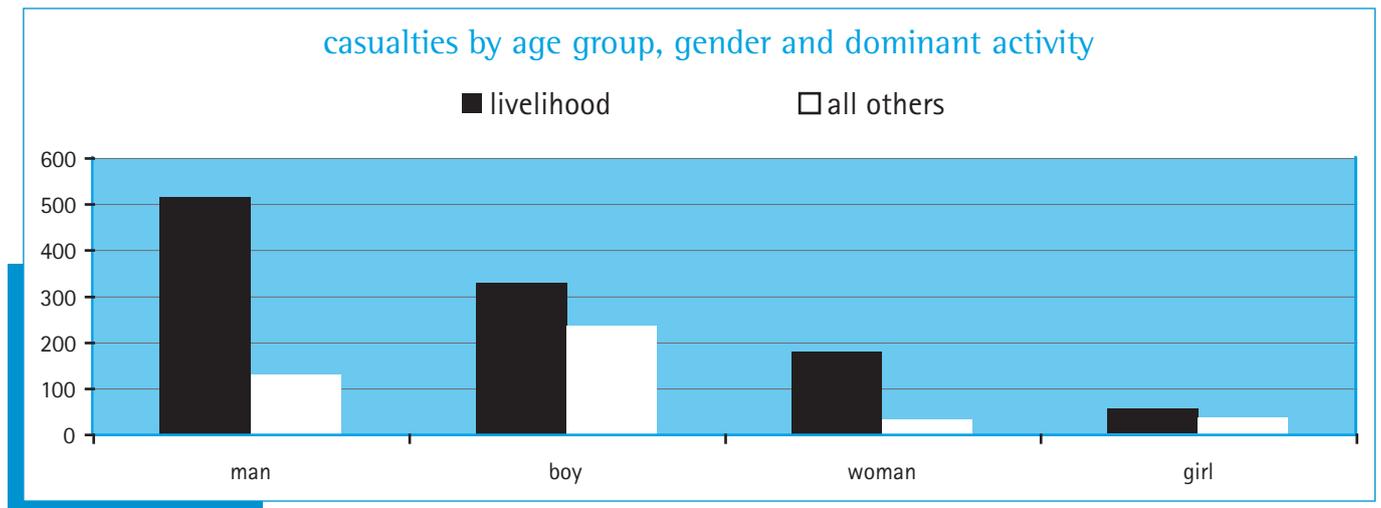
The greatest proportion of cluster submunitions casualties in the 1975 to 2007 period occurred while carrying out three livelihood activities. Farming, herding and digging accounted for 61.1 percent (919) of casualties, while in total all other activities were 38.9 percent (585). Farming (688) was the leading cause of cluster submunitions casualties among both ethnic majority 39.9 percent (479 of 1,199 ethnic majority casualties) and minority groups, which were nearly twice the rate of the majority at 68.5 percent (209 of 305 of ethnic minority casualties).

Dominant locations where cluster submunitions incidents occurred were cultivated or grazing land at 53.1 percent (799), near the home or school at 19.6 percent (295), and hilly areas at 9.6 percent (145). All other locations combined were 17.6 percent (265). During the post-strike period of 1975 to 1979, dominant locations where cluster submunitions incidents (809) occurred were cultivated or grazing land at 58.7 percent (475), near the home or school at 19.8 percent (160), and hilly areas at 7.5 percent (61). All other locations combined were 14 percent (113). The data show that as the population resettled from 1980 to date, hazards in prime livelihood areas such as cultivated and grazing land decreased slightly, while casualty rates near homes and schools remained constant, and in hilly and other areas of community expansion, casualties increased somewhat.

■ Males

Analysis shows that males are the highest risk group at 80.1 percent (1,205) of all casualties with 480 killed and 725 injured. According to the RENEW study, men are more aware of dangerous areas and activities and take more risks than women.⁹¹ Among this risk group, men accounted for 53.4 percent (643) and boys 46.6 percent (562), respectively, of all male casualties. Boys represented 86.3 percent of 651 child casualties where full details are available, and boys between the ages of six and 15 years old (498) are the most vulnerable to incidents involving cluster submunitions, representing 41.3 percent of male casualties. Boys of that age were most vulnerable during herding at 26.3 percent (131), farming at 25.9 percent (129), and playing with cluster submunitions at 16.7 percent (83).

Men were most likely to become casualties when farming at 58.3 percent (375) of all adult male casualties; "other" activities came at 12.4 percent (80), with scrap metal collection trailing at 8.7 percent (56).



■ Females

Though a minority risk group, females were 19.9 percent of all casualties (299 detailed records), with 83 killed and 216 injured. Women accounted for 70.2 percent (210) and girls for 29.8 percent (89) of the female total.

Of all risk sub-groups to become cluster submunitions casualties, women were proportionally the most vulnerable to cluster submunitions in comparison with all other known device types. Cluster submunitions caused 56.2 percent (299) of all female casualties, compared with 34.2 percent (182) by other ERW and 9.6 percent (51) by mines. At least 61.5 percent (184) of female cluster submunitions casualties occurred while farming, of which 153 were women and 31 were girls. The other major activity in which girls were at risk was herding, at 14.6 percent of girl casualties.

■ Ethnic minorities

Ethnic minority populations are among those at the greatest risk of encountering and becoming a casualty of mines/ERW.⁹² The RENEW study showed that members of ethnic minority groups were more likely to be involved in mine/ERW incidents than members of the ethnic majority. While ethnic minority groups comprise only 7.9 percent of the total population, they accounted for 16.3 percent of all mine/ERW casualties between 1975 and 2005.⁹³ It was found that the incidence rate in mountainous areas was 2.34/1,000 of population, which was 4.3 times higher than all other areas surveyed combined (0.55/1,000 averaged).⁹⁴ Where ethnic identity was recorded, ethnic minority casualties constitute 20.3 percent (305) of total cluster submunitions casualties, and 49.7 percent of all minority mine/ERW casualties (613). Ethnic minorities were nearly 12 times more likely to become casualties when farming (209 or 68.5 percent) than through scrap metal collection at 5.9 percent (18), which was the second most common activity.

Ethnic minority groups live predominantly in upland areas – especially in Huong Hoa and Da Krong districts, where there were many battles, military bases and heavy bombing of the Ho Chi Minh Trail.⁹⁵ These area types usually exhibit high cluster submunitions contamination rates in Quang Tri and other provinces.⁹⁶ Huong Hoa ranked first for cluster submunitions casualties from 1975 to 2007. The poorest of the poor, these groups traditionally rely on rotational "slash and burn" agriculture of steep mountain slopes and limited wet rice cultivation.⁹⁷

VIETNAM

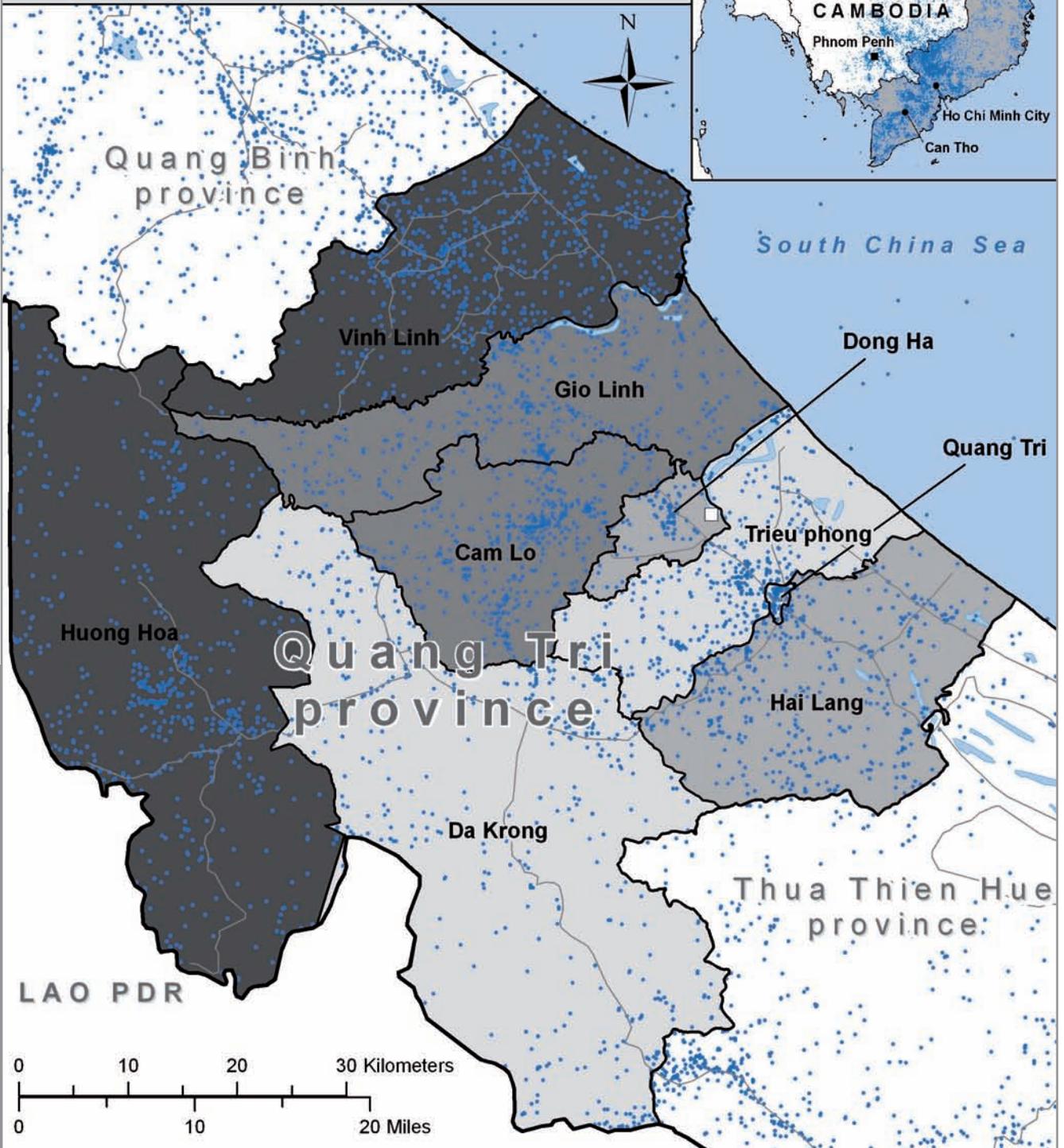
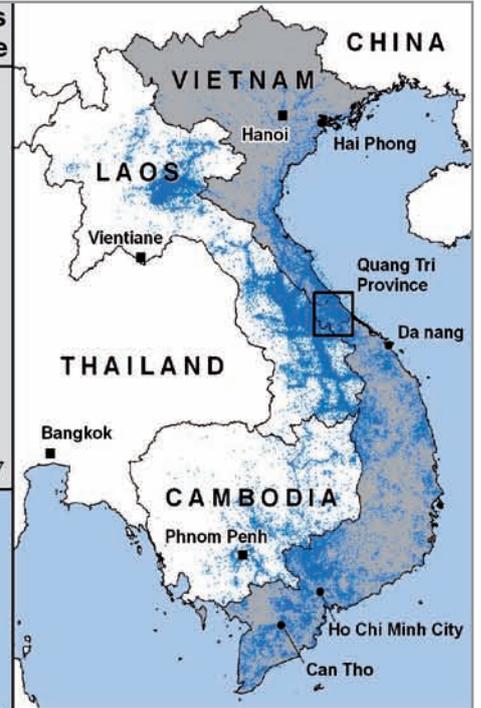
Cluster munitions and casualties per district in Quang Tri province

Legend

- | | |
|---|--|
|  Country boundary | Total casualties per district |
|  Province boundary |  1 - 99 casualties |
|  Lake, large river |  100 - 199 casualties |
|  Major road |  200 - 299 casualties |
|  Province capital |  More than 300 casualties |
|  Cluster munitions strikes | |

Boundary representation is not authoritative
 Cluster munitions used by US from 1965 to 1973
 Cluster submunitions casualties from 1975 to 2005

1/04/2007



■ Poverty and education

Cluster submunitions casualties generally tend to be poor, relatively uneducated males involved in farming activities, a situation most acute in the ethnic minority population.⁹⁸ Of all casualties, 89.4 percent (1,345) did not have more than a secondary school education, or were illiterate. There is a link between education and income levels and the incidence of casualties, with those having the lowest education and income being the most vulnerable, both in terms of locations where casualties occur and in terms of activities leading to casualties.⁹⁹

The majority of cluster submunitions casualties live in rural areas and rely on agriculture for income: from 1975-2007 in Quang Tri, 91.2 percent (1,371) resided in rural areas of Quang Tri, while only 8.8 percent (133) were from the major population centers such as Dong Ha and Quang Tri townships. The more rural the location and the lower the economic/educational level, the higher the casualty rate, particularly with regard to upland areas and ethnic minority groups.¹⁰⁰

RENEW found that approximately 97 percent of mine/ERW-impacted families earned less than 5 million Vietnamese Dong (VND, about US\$196) in an average year. Of those, 72 percent earned less than 2 million VND (about US\$130). Likewise with education, 95.1 percent of mine/ERW casualties did not attain a high school education.¹⁰¹ Data showed that about 91 percent of casualties who did not know that the incident area was dangerous came from families with income levels of 5 million VND per year or less.¹⁰²

Major areas of impact

■ Unspecified targets

By 1975, 96.9 million cluster submunitions were delivered over a total area of 329,707 square kilometers. This means 294 cluster munitions had been delivered per square kilometer in Vietnam, about two cluster submunitions per person.¹⁰³ In total, all 59 provinces and all five major cities were targeted by cluster munitions strikes to varying degrees. The two top provinces of Vietnam in order of numbers of cluster munitions dispensed are Quang Binh 14.6 percent (14.8 million) and Quang Tri at 12.6 percent (12.8 million).

Targeting data indicated that 6.4 percent of cluster munitions were dispensed against unknown, unspecified or unidentified targets, while the top target at 21.5 percent was to "confirm enemy location," i.e., not to strike a known and identified target.

In Vietnam, in addition to 59 provinces there are five major administrative municipalities: Can Tho, Da Nang, Ha Noi, Hai Phong and Ho Chi Minh. Together these metropolitan areas accounted for 4,757,853 (about four percent) of total cluster submunitions used against Vietnam. Ho Chi Minh ranked 11 amongst all impacted provinces and cities and accounted for 65.8 percent (3.13 million) of cluster submunitions targeted at the major metropolitan centers of Vietnam. The use of cluster submunitions within the administrative area of Ho Chi Minh, the former capital of the southern government and ally of the United States, was more than twice that of their use against the "enemy" capital of Ha Noi and all other municipalities combined. The primary target in Ho Chi Minh was to "confirm enemy location" within the current boundaries of the city, at 79.9 percent (2.5 million), with targeting of "troops" a distant second at 9.6 percent (299,475).¹⁰⁴

■ Cluster munitions and human security

Negative linkages between general ERW contamination and development activities are evident from various sources, and generally the North Central Coast region of Vietnam is considered one of the poorest.¹⁰⁵ It was found that landmines/ERW in Quang Tri province, one of the most impoverished in Vietnam, continued to negatively impact "the health, spirituality and property of local residents, harm[s] the natural environment and restrict[s] the socio-economic development".¹⁰⁶

Of survey respondents in Quang Tri province, 83.4 percent asserted that their lives were impacted by mines/ERW: 66.8 percent said mines/ERW could cause death or injury, 36.2 percent found that agricultural activities were hampered by contamination, and 36 percent feared the possibility of relatives and friends becoming mine/ERW casualties. Farmers between the ages of 26 and 55 who earned less than 5 million VND per year were the majority of respondents who perceived their agricultural activities impacted by mine/ERW contamination. Other impacts associated with mine/ERW contamination included restriction of travel (14.3 percent), increased demands of caring for injured/disabled relatives (about 10 percent), risk during fire-wood/water/food collection activities (6.7 percent), and limitations on construction activities (6.2 percent).¹⁰⁷

Of those surveyed, 63 percent had encountered landmine/ERW objects, with 50.4 percent having an encounter annually, and 14.9 percent monthly. Cluster submunitions were identified as the device causing most casualties.¹⁰⁸ According to a 2007 news article, landmine/ERW contamination still affects 21.1 percent (60,000 square kilometers) of land in Vietnam,¹⁰⁹ while only 20.1 percent of the total area of the country is considered arable and 56.8 percent of the population relies on agriculture for income.¹¹⁰ The contamination rate is considerably higher in the North Central Coast region, including Quang Tri province.

In terms of socio-economic impacts identified by the majority of respondents in the survey, fear of mine/ERW contamination, i.e. the psychological impact, was the highest response (89 percent of village leaders and 86 percent of villagers). The region surveyed comprises three of the poorest and most underdeveloped provinces in the country. Among a predominantly rural population that relies heavily on farming income for subsistence, "fear and insecure feelings" over contamination were seen as leading to lowered productivity, alongside underutilization of arable lands. The report cites the financial burdens incurred by families (burial, trauma and other medical treatment) and on social welfare resources (trauma and other medical treatment, rehabilitation and training services).¹¹¹

The main reasons cited in the RENEW study for knowingly entering landmine/ERW contaminated areas were collecting scrap metal (33.4 percent), followed by farming (15.7 percent), professional tasks (8.5 percent) and herding cattle (six percent).¹¹² Notably, 77.2 percent (1,059 of 1,371) of cluster submunitions casualties neither saw nor handled the device. Of mine casualties, 75.1 percent (232 of 309) did not see or touch the device. For other ERW casualties 53.5 percent (748 of 1,398) did not see or touch the device before the incident. Among mine/ERW casualties who saw the device and decided to touch it (853 of 3,078), cluster submunitions casualties (244) did so less than half as frequently as other ERW casualties (541), but were about eight times more likely to handle cluster submunitions than landmines (68).¹¹³

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives			✓
2 Impact on resources		✓	
3 Impact on public sector		✓	
ST SUBTOTAL		4	3
T TOTAL			7

Impact conclusion

Vietnam scores high owing to the rate of immediate post-strike casualties for the only province where data is available, the persistence of cluster submunitions contamination and casualties over decades, the daily hazards posed to safely accessing arable land and other areas where livelihood activities occur, and its negative relationship to community development activities. The high rate of cluster submunitions casualties who do not see or touch items before they explode indicates that these munitions are very unstable, creating a situation that more closely parallels landmines rather than typical ERW impact.

In short, ERW impact causes deaths and injuries, leads to fear and loss of productivity, and in the current economic climate survivors become a burden for both families and society.

Capacity to respond

During the periods 1975-1977 and 1991-1998, the government and provinces utilized scant finances and human resources for clearance operations in highly contaminated areas where large national and provincial projects were to be constructed. It was not specified who carried out these tasks, nor to what extents and in which locations.¹¹⁴

International humanitarian mine action efforts began in Vietnam during the late 1990s. The country does not have a formal national cluster submunitions or a more general mine/ERW program. However, activities aimed at reducing the risk from landmine/ERW do exist and are undertaken by the government, UNICEF, and international NGOs, *de facto* coordinated by the "Landmine Working Group". Comprehensive risk education (including for cluster submunitions) and mine/ERW clearance by international NGOs as of 2007 have only reached portions of four affected provinces. The extent of military clearance in Vietnam is unknown. Casualties from cluster submunitions are included in the landmine/ERW victim assistance coordinated by various ministries receiving the support of international operators. Existing healthcare and rehabilitation services are adequate, but accessing them can be difficult due to cost and distance.¹¹⁵

Recommendations

- A nationwide landmine/ERW casualty surveillance system should be deployed and data should be made available on a regular and timely basis for identification of casualty "hotspots" to assist prioritization of clearance/EOD tasks, particularly in relation to community development projects, and for both MRE and survivor assistance activities.
- Given that the vast majority of cluster submunitions casualties occur in cultivated areas and areas of community expansion, these areas should be prioritized for clearance/EOD tasks.
- Humanitarian mine action programs and infrastructure/community development programs should identify areas in which their cooperation can be of direct benefit to affected communities.

Community experience

Cluster submunitions contamination in and near populous or livelihood areas in Vietnam leads to the vast majority of casualties. These are just two stories of the hundreds that survivors have to tell:

The eldest child in his family, Luong was 10 years old when he and his cousin Nhan went to collect mushrooms on a hill about 700 meters from their homes in the village of Minh Tien, Le Thuy district, the morning of 20 September 2003. Luong is one of five children in a family of nine where only two people are of working age, his father and stepmother; the boy's mother died in childbirth. While they were collecting mushrooms, the boys found a steel ball, which they picked up. On their way home they stopped at a small local shop and tried to trade the steel ball for ice cream. When the shopkeeper refused and they realized their prize was worthless, the boys threw the ball off to the side of the road and the detonation knocked the boys to the ground. Nhan was slightly injured by fragments in his legs, but Luong's injuries were far more serious. Surgeons at the provincial hospital removed 40 centimeters of his small intestine and performed a colostomy. Luong was released from hospital on 29 September 2003, but after some months had to have the colostomy reversed. During both hospitalizations, one of his parents

had to stay with him as caretaker, bringing him his meals, bathing him, and making sure he took his medicines. This effectively cut the family's economic productivity in half each time he was hospitalized.¹¹⁶

Community experience

In Cam Lo district of Quang Tri province on 8 April 2003, Vien, a 53-year-old retiree, was walking along the edge of his farm in the village of Cam Phu when he saw a semiburied submunition. Understanding the danger to his two children and having found several BLUs previously, he decided to remove the item and threw it across the stream, where it exploded. Vien was slightly injured.

Cluster submunitions have killed or injured over 40 locals in Vien's part of the Khe Gio Valley since the end of the war. Once a major stronghold of the Vietcong,¹¹⁷ the area was hit with cluster munitions repeatedly. In one example, on 21 March 1970 a single plane dropped 18,720 BLU-26s near Vien's farm; the target for the attack was unspecified. In total, 553 cluster munitions strikes were made in Cam Lo and over 1.49 million submunitions dispensed.¹¹⁸ Cam Lo district alone recorded 221 cluster submunitions casualties over the past 32 years and ranks fourth in the province.¹¹⁹



- ▶ We were hired to clear brush from a forest farm and my knife blade struck a *bombi* in the bush.
- ▶ I was digging holes to plant a banana tree in the back yard when my hoe hit a *bombi* underground and it exploded.
- ▶ While herding the cow by the edge of the village, we saw two *bombis* lying on the ground and threw them against a big jackfruit tree.
- ▶ I was raking the pine needles and a *bombi* hidden in the needles detonated.
- ▶ One of the cows nearby stepped on a *bombi* and the device went off.
- ▶ We boys had found a *bombi* left on the surface by a local scrap metal hunter and had played with it.
- ▶ I was hoeing in the garden and recognized the dark green *bombi* element as my hoe came down on it.
- ▶ I quickly excavated the signal and the hidden cluster *bombi* detonated.

FOCUS: Africa

Cluster munitions use in Africa demonstrates that even limited use of the weapon can have a significant human impact. The extent of the threat of unexploded cluster submunitions cannot be fully assessed as the issue is not considered to be a priority among other development and conflict crises. However, cluster submunitions, other ERW and mines block access to valuable agricultural land and water resources.

CHAD



Key findings

- Incomplete data collection does not differentiate ERW casualties, but ERW casualties are on the rise.
- Young male shepherds are most vulnerable to ERW, which block access to water and resource areas.

Country indicators¹²⁰

GDP (purchasing power parity): US\$15.26 billion (2006 est.)

GDP - per capita (PPP): US\$1,500 (2006 est.)

GDP - composition by sector: (2006 est.)

- *agriculture:* 32.5 percent
- *industry:* 26.6 percent
- *services:* 40.8 percent

Labor force - by occupation: 2.719 million (1993 est.)

- *agriculture:* 80 percent (subsistence farming, herding and fishing)
- *industry and services:* 20 percent

Unemployment rate: N/A

HDI: 0.368, Chad is ranked 171st out of 177 countries in the low human development group.¹²¹

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 57.9. Chad is ranked 100th out of 102 developing countries.¹²² Approximately 80 percent of the population lives with less than US\$1 per day.¹²³

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by the Libyan army in Chad in 1987.

Cluster submunitions used: Two types of former Soviet Union (USSR)-manufactured submunitions have been found: PTAB-2.5M antivehicle submunitions and AO-1SCh antipersonnel submunitions.¹²⁴ There have been unconfirmed reports of French use of Beluga submunitions.¹²⁵

Number of cluster submunitions used: N/A

Contamination estimate: The 2002 Landmine Impact Survey (LIS) identified 92 sites with cluster munitions contamination distributed in northeastern Chad (Borkou Ennedi Tibesti region, BET), eastern Chad (Biltine region, in particular in Arada, Biltine, Guéréda and Iriba) and east of N'Djamena.¹²⁶

Failure rate estimate: An estimate is not available, as the National Demining Office (Haut Commissariat National de Déminage, HCND) does not keep differentiated records for ERW.¹²⁷

Number of recorded casualties: The number of casualties remains unknown due to the lack of comprehensive data collection and a lack of differentiation of incidents according to device type.

Estimated casualties: N/A

Human impact measure

Casualty data analysis

Many incidents go unreported in Chad because no comprehensive data collection mechanism is in place. HCND records of ERW casualties are not differentiated by type of ordnance, nor is the distinction between mines and ERW always clearly made. In 2005 and 2006, the number of ERW casualties was rising, due to expanded conflict around N'Djamena, among other reasons. However, no cluster submunitions casualties were differentiated, despite incidents in regions contaminated with cluster submunitions, as most of the recorded casualties were concentrated in the Borkou Ennedi Tibesti and the Biltine regions, as well as around N'Djamena.¹²⁸

Most impacted groups and areas

Out of 339 recent casualties recorded in the 2002 LIS, 87 percent were male, particularly between five and 29 years old.¹²⁹ The LIS data also showed that the most common activity at the time of incident was tampering with ERW (36 percent), resulting in injuries to the upper body consistent with ERW tampering. The main reasons for this were curiosity and economic necessity, i.e. the selling or recycling of scrap metal.¹³⁰

Some of the most-impacted groups, according to the LIS, were shepherds, who accounted for 155 of the recent casualties.¹³¹ This activity is often carried out by young boys, who have a lot of "spare time in which to investigate any strange or interesting devices."¹³²

The main cluster munitions-contaminated areas are characterized by a rural population with a generally low income that includes sedentary farmers and nomadic shepherds. The typical impacted area is a rural village, where ERW contamination is found in fields, water sources, housing areas and roads, blocking access to water and other vital resources.¹³³

Impact conclusion

Due to the lack of data, the human impact of cluster submunitions is not known. However, ERW in general block access to valuable and limited resources.

Capacity to respond

The HCND coordinates mine action, including victim assistance, with technical support from UNOPS, UNDP and UNICEF. However, HCND coverage is not nationwide. There are no specific risk education or other programs aimed at eliminating the dangers of cluster submunitions. Chad does not have a national victim assistance policy, and access to assistance and resources is limited.¹³⁴

Recommendation

- A proactive and nationwide casualty data mechanism, differentiating between casualties from cluster munitions and other devices, to be used for planning purposes within a national victim assistance program.

ERITREA



Key findings

- Despite incomplete casualty data, children and internally displaced people (IDP) seem to be most vulnerable to cluster submunitions contamination.
- Cluster submunitions contamination mainly affects rural areas and activities.

Country indicators¹³⁵

GDP (purchasing power parity): US\$4.471 billion (2005 est.)

GDP - per capita (PPP): US\$1,000 (2005 est.)

GDP - composition by sector: (2006 est.)

- *agriculture:* 9.9 percent
- *industry:* 25.4 percent
- *services:* 64.6 percent

Labor force - by occupation: N/A

- *agriculture:* 80 percent
- *industry and services:* 20 percent

Unemployment rate: N/A

HDI: 0.454, Eritrea is ranked 157th out of 177 countries in the low human development group.¹³⁶

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 38.1. Eritrea is ranked 70th out of 102 developing countries.¹³⁷

Disability spending: N/A, but approximately 150,000 people live with a disability.¹³⁸

Cluster munitions: country summary

Use period: Cluster munitions were used by Ethiopian forces in 1990 following the Battle of Massawa and during the 1998-2000 Badme border area conflict between Ethiopia and Eritrea. The Mine Action Coordination Centre (MACC) of the UN Mission in Ethiopia and Eritrea (UNMEE) knows of approximately 30 to 40 strikes.¹³⁹

Cluster submunitions used: UK-manufactured BL-755, Soviet-designed PTAB-2.5(M) and AO-1 submunitions were found.¹⁴⁰

Number of cluster submunitions used: N/A

Contamination estimate: Unexploded cluster submunitions were found in the Asmara airport, the Badme area, the ports of Assab and Massawa on the Red Sea coast, the Korokon IDP camp in Gash-Barka administrative sector and the Adi Bare IDP camp in Shambiko.¹⁴¹ However, UNMEE MACC reports that clearance teams have not cleared any failed submunitions "for a long while."¹⁴²

Failure rate estimate: N/A. However, during the strike against the Korokon IDP camp, the low level of immediate casualties has been directly associated to the high failure rate of the submunitions.¹⁴³

Number of recorded casualties: Incomplete casualty data indicates that 10 cluster submunitions casualties have been reported.

Estimated casualties: N/A, but due to limited casualty data collection outside the Temporary Security Zone (TSZ), casualty data is incomplete.¹⁴⁴

Human impact measure

*Casualty data analysis*¹⁴⁵

On 22 April 1990, two cluster munitions were reported to have been used over crowded street in the center of the port town of Massawa. The strike was reported to have killed about 50 people and injured another 110, causing severe injuries to many.¹⁴⁶

At least 10 confirmed cluster submunitions casualties have been recorded, including at least seven people killed and three injured. At least eight of the casualties were children; one child was killed during the cluster munitions strike on the Korokon IDP camp in May 2000. No new cluster submunitions casualties have been reported between October 2006 and April 2007.

The total number of cluster submunitions casualties is unknown, as casualty data collection mechanisms are limited and do not differentiate types of ERW that cause incidents. However, despite the limited information available, there is evidence that about 70 percent of casualties are caused by ERW rather than by mines.¹⁴⁷

Most impacted groups and areas

Limited casualty data does not allow for meaningful analysis, but children seem to be among the most impacted groups. Child casualties occurred both during strikes and in the aftermath, usually due to tampering with unexploded cluster submunitions. For example, in 2000, a 16-year-old boy was killed in an attempt to open a BL-755 submunition with a stone. Three more children were killed in separate incidents in the BL-755 contaminated area near Korokon.¹⁴⁸ In 2006, two boys were killed and another one was injured while tampering with a device that, according to UNMEE, was either a grenade or a submunition.¹⁴⁹

Eritrea's fragile economy is mostly based on agriculture and pastoralism.¹⁵⁰ This is significant when considering that mine/ERW contamination is predominantly a rural phenomenon.¹⁵¹ Subsequently, most ERW casualties are young males tending animals, farming, or carrying out other livelihood activities.¹⁵²

According to the 2004 Landmine Impact Survey (LIS), IDPs are particularly exposed to the risk of mines and ERW, since their villages of origin are often contaminated and this could pose an obstacle to their return.¹⁵³ Additionally, several cluster munitions strikes were carried out on IDP camps.

Impact conclusion

The post-strike impact of unexploded cluster submunitions is largely unknown, but ERW appear to pose a moderate threat in the TSZ, the only area where monitoring is taking place. The nationwide extent of the problem is not known. However, Eritrea reports that there are 150,000 people with disabilities, of whom a significant number are mine/ERW survivors.

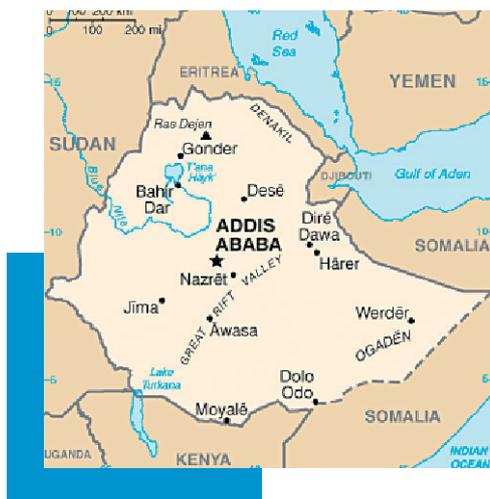
Capacity to respond

The Eritrean Demining Authority (EDA) is responsible for national mine action policy, including victim assistance under the Ministry of Labor and Human Welfare. Implementation of mine action programs, including risk education, is carried out by the Eritrean Demining Operations (EDO) with technical support from UNDP and UNICEF. However, in the TSZ, the UNMEE is responsible for mine action. There are no specific programs relating to cluster munitions.¹⁵⁴

Recommendation

- Considering the limited use of cluster munitions, extensive contamination due to mines and other ERW, possible new mine use, and the fragile developmental situation, extension of clearance and injury surveillance mechanisms outside of the TSZ is recommended to facilitate development.

ETHIOPIA



Key findings

- Incomplete casualty data impedes analysis of the human impact of cluster munitions and mines/ERW in general.
- Unexploded cluster submunitions seem to pose a limited and localized threat on farm and pasture land.

Country indicators¹⁵⁵

GDP (purchasing power parity): US\$71.63 billion (2006 est.)

GDP - per capita (PPP): US\$1,000 (2006 est.)

GDP - composition by sector: (2006 est.)

- *agriculture:* 46.7 percent
- *industry:* 12.9 percent
- *services:* 40.4 percent

Labor force - by occupation: 27.27 million (1999)

- *agriculture:* 80 percent
- *industry:* eight percent
- *services:* 12 percent (1985)

Unemployment rate: N/A

HDI: 0.371, Ethiopia is ranked 170th out of 177 countries in the low human development group.¹⁵⁶

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 55.3, Ethiopia is ranked 98th out of 102 developing countries.¹⁵⁷ Approximately 39 percent of people lives below the poverty line.

Disability spending: N/A

Cluster munitions: country summary

Use period: In 1998, during the 1998-2000 Badme border area conflict between Ethiopia and Eritrea, Eritrean forces carried out at least two cluster munitions strikes.

Cluster submunitions used: Reportedly, CB-500 cluster munitions containing 240 PM-1 submunitions have been used.¹⁵⁸

Number of cluster submunitions used: N/A

Contamination estimate: Following two air strikes in 1998, contaminated areas would have included the cities of Mekele and Adigrat and their surroundings. Reportedly, unexploded cluster submunitions have been found on roads, agricultural land, and fields used for tending animals.¹⁵⁹ However, the Ethiopian Mine Action Office (EMAO) does not know of cluster munitions use in or by Ethiopia and as of April 2007 had not come across cluster submunitions contamination.¹⁶⁰

Failure rate estimate: The failure rate of the PM-1 submunitions is unknown.

Number of recorded casualties: Two strikes caused at least 272 casualties. The number of post-strike casualties is unknown as EMAO is not able to collect casualty data outside its operational areas.¹⁶¹

Estimated casualties: N/A

Human impact measure

*Casualty data analysis*¹⁶²

Complete casualty data is not available due to a lack of a clear mandate, coordination, political will, and funding issues. However, the Eritrea-Ethiopia Claims Commission found that cluster munitions strikes had resulted in civilian "deaths, wounds and suffering."¹⁶³

Two air strikes by Eritrean forces caused at least 272 casualties of which 54 were children (57 killed, 215 injured). On 5 June 1998, cluster munitions targeting the Mekele airport instead struck the Ayder School and surroundings, causing at least 54 child casualties.¹⁶⁴ A second strike on 11 June 1998 against the town of Adigrat killed at least four people and injured at least 30,¹⁶⁵ but possibly up to 40 people.¹⁶⁶

Information on post-strike casualties is not available as inadequate data collection impedes a full grasp of the scope of the problem.

The United Nations Mission in Ethiopia and Eritrea (UNMEE) is not aware of any cluster munitions incidents inside its mandate area.¹⁶⁷

Most impacted groups and areas

As all recorded casualties occurred during strikes, the post-conflict human impact is unknown. However, ERW contamination poses a moderate problem in Ethiopia. However, cluster submunitions are not considered an issue by ERW-affected communities, while violence in general is.¹⁶⁸

Impact conclusion

Unexploded cluster submunitions seem to pose a limited, localized threat to agriculture and shepherding.¹⁶⁹

Capacity to respond

The EMAO implements mine action, including risk education but excluding victim assistance, under the supervision of the Mine Action Supervisory Board. It receives technical advice from UNDP and UNICEF. EMAO does not collect data on cluster munitions or implement specific projects. Transparency and capacity seem to be the main impediments to EMAO operations. Victim assistance is not considered to be a priority, even though Ethiopia is considered to be one of 24 States Parties to the Mine Ban Treaty, with significant numbers of survivors and "the greatest responsibility to act, but also the greatest needs and expectations for assistance."¹⁷⁰

Recommendation

- The human impact of cluster submunitions, mines, and other ERW can only be addressed in full when victim assistance, including comprehensive and publicly available data collection, becomes a priority and is considered an integral responsibility of the EMAO.

Community experience

"On Friday there was nothing to protect the children when a small warplane from neighboring Eritrea appeared over the eucalyptus trees near the elementary school and dropped a cluster bomb, only to return from the opposite direction and drop another one...the second bomb cut down the fathers and mothers and neighbors who had rushed to the playground upon hearing the children's screams."¹⁷¹

SIERRA LEONE



Key findings

- A Nigerian intervention force used cluster munitions in 1997 and at least 28 people were injured and killed during the strikes.

Country indicators¹⁷²

GDP (purchasing power parity): US\$5.38 billion (2006 est.)

GDP - per capita (PPP): US\$900 (2006 est.)

GDP - composition by sector: (2001 est.)

- *agriculture:* 49 percent
- *industry:* 31 percent
- *services:* 21 percent (2001 est.)

Labor force - by occupation: 1.369 million (1981 est.)

- *agriculture:* N/A
- *industry:* N/A
- *services:* N/A

Unemployment rate: N/A

HDI: 0.335, Sierra Leone, in the low development group, is ranked 176th out of 177 countries.¹⁷³

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 51.9. Sierra Leone is ranked 95th out of 102 developing countries; 47 percent of the population is not expected to live beyond the age of 40.¹⁷⁴ Over 74 percent of the population lives with less than US\$2 per day.¹⁷⁵

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used in 1997, reportedly by Nigerian forces undertaking an Economic Community of West African States Monitoring Group (ECOMOG) intervention.

Cluster submunitions used: French-manufactured BLG 66 or "Beluga" cluster submunitions and British-manufactured BL-755s were reportedly used.¹⁷⁶

Number of cluster submunitions used: At least five cluster munitions were dropped on Kenema city, on Lokosama near Port Loko, and on civilian targets in Freetown.¹⁷⁷

Contamination estimate: N/A

Failure rate estimate: N/A

Number of recorded casualties: At least 28 casualties were recorded during strikes.

Estimated casualties: N/A

Human impact measure

Casualty data analysis

On 11 December 1997, three cluster munitions were dropped on Kenema, 240 kilometers from Freetown, resulting in 28 casualties (10 people killed and 18 injured). No further details regarding additional strikes or post-conflict cluster submunitions casualties are available and no ERW incidents causing casualties have been recorded since the end of the civil war in 2002.¹⁷⁸ This is partly due to the non-existence of a data collection mechanism.

Impact conclusion

Sufficient information is not available to analyze the human impact of ERW, including cluster submunitions, in Sierra Leone. The protracted civil war exacerbated poverty and weakened social cohesion and coping mechanisms.¹⁷⁹ Sierra Leone is almost completely dependent on foreign aid.

Capacity to respond

There is no mine action program in Sierra Leone. However, an Information Management System for Mine Action (IMSMA) has been installed. It is not known if the database is maintained. The war shattered Sierra Leone's health facilities, leaving the health system in an appalling condition. Limited access to basic equipment, drugs and resources combined with a lack of qualified staff explain the low quality of services.¹⁸⁰

Recommendation

- Conduct a survey of ERW contamination, including cluster munitions and subsequent casualties, and maintain IMSMA.

SUDAN



Key findings

- At least 43 cluster munitions casualties are recorded in Sudan, of which several occurred during strikes on civilian targets such as hospitals.
- Land where ERW contamination is suspected remains unused out of fear, despite land scarcity.
- Mines and ERW impede refugee and IDP return.

Country indicators¹⁸¹

GDP (purchasing power parity): US\$96.01 billion (2006 est.)

GDP - per capita (PPP): US\$2,300 (2006 est.)

GDP - composition by sector: (2006 est.)

- **agriculture:** 35.5 percent
- **industry:** 24.8 percent
- **services:** 39.7 percent

Labor force - by occupation: 7.415 million (1996 est.)

- **agriculture:** 80 percent
- **industry:** seven percent
- **services:** 13 percent (1998 est.)

Unemployment rate: 18.7 percent (2002 est.)

HDI: 0.516, Sudan is ranked 141st out of 177 countries in the low development group.¹⁸²

Measures of poverty and development: The Human Poverty Index (HPI-1) value for Sudan is 31.3, ranking 54th out of 102 developing countries.¹⁸³ Poverty is widespread and approximately 40 percent of people live under the poverty line. However, there are big differences between regions, the north being the richest. The civil war increased poverty and caused instability, food shortages and several million internally displaced persons (IDPs).

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by Sudanese government forces against the Sudan People's Liberation Movement/Army (SPLM/A) in South Sudan between 1995 and 2000.¹⁸⁴ It has been reported that cluster munitions strikes were directed specifically against non-military targets including IDP camps, hospitals, NGO compounds, cultivated lands, and villages. The former US Assistant Secretary of State for African Affairs declared in 1999 that "transport planes frequently drop cluster bombs on civilian settlements without even the pretense of military necessity."¹⁸⁵

Cluster submunitions used: Chilean-manufactured PM-1 CEM submunitions,¹⁸⁶ Spanish-manufactured HESPIN 21, the US-produced M42 and Mk118 (Rockeye) and its Brazilian copy were used.¹⁸⁷ Soviet-manufactured PTAB-1.5 AT variants were also identified.¹⁸⁸

Contamination estimate: Contaminated provinces include Southern Kordofan, Bahr al-Jabal, Jongley, al-Buhairat, Eastern Equatoria, Blue Nile and Western Equatoria. The UN Mine Action Office (UNMAO) reported that most of the unexploded submunitions were found in al-Buhairat, Bahr al-Jabal and Southern Kordofan.¹⁸⁹

Numerous strikes were identified between 1995 and 2000: on a Catholic Church compound, a school, and cultivated land in Chukudum; on the Labone IDP camp in Eastern Equatoria; on several villages in Bahr al-Ghazal province; on the villages of Koba and Lomon in the Nuba Mountains; on Yei Hospital; on an area close to the Norwegian People's Aid (NPA) hospital in Nimule; on an area next to a food relief drop zone in Akak; on a hospital and Médecins sans Frontières (MSF) compound in Kajo Keji; and reportedly around the town of Bentiu.¹⁹⁰

Failure rate estimate: N/A. However, 640 submunitions have been found and destroyed by UNMAO.¹⁹¹ It seems submunitions failed to explode mostly because of deployment deficiencies, soft ground, and the presence of forest overgrowth.¹⁹²

Number of recorded casualties: There are at least 43 cluster munitions casualties, including at least eight children.

Estimated casualties: The total number of casualties is not available as there is no nationwide data collection and casualties are often not differentiated according to device type.¹⁹³ However, there could be at least 89 additional casualties.

Human impact measure

Casualty data analysis

There are at least 43 cluster submunitions casualties in Sudan (18 killed and 25 injured). At least eight were children, five of them girls. There were 16 casualties occurring during strikes and 27 due to unexploded cluster submunitions.¹⁹⁴

UNMAO recorded 23 cluster submunitions casualties due to failed cluster submunitions (nine killed and 14 injured); 19 were males and four were females. Of the 10 casualties whose ages were recorded two were children. The ages ranged from 10 to 32, the average age being 21. Activity at the time of the incident was recorded for twelve casualties: four activities were military; three were tending animals; three traveling; and one farming.¹⁹⁵ Most casualties occurred in Kordofan (13) and Bahr al-Ghazal (five).¹⁹⁶ In 2005, UNMAO recorded one submunitions incident but the number of casualties was not known.¹⁹⁷

Numerous casualties have been reported during strikes. However, there are some cases where more than one type of weapon may have been used, including in Labone IDP camp in 1997, as well as in Adet and Thiet in 1998. During these strikes with mixed weapons at least 89 casualties have been reported, including 38 killed and 51 injured.¹⁹⁸

Most impacted groups and areas

South Sudan, although rich in natural resources, is also the area most contaminated with unexploded cluster submunitions. The casualties recorded by UNMAO were concentrated in southern or central states, particularly in Southern Kordofan.¹⁹⁹ These are areas characterized by widespread poverty, a rural population that relies on agriculture and herding for livelihood, a high number of displaced, and a lack of infrastructure.²⁰⁰ Up to 80 percent of the population depends on agriculture. However, suspect land remains uncultivated due to fear of mines and ERW.²⁰¹

IDPs and refugees willing to return to their villages in the South are inhibited by the threat of mines and ERW.²⁰² Due to mine/ERW contamination and general lack of security, the work of relief agencies is greatly hindered. The World Food Program estimated that mines and ERW are directly responsible for endangering the food security of two million people.²⁰³

Impact conclusion

The human impact of cluster submunitions is largely unknown and will require further surveying. However, unexploded cluster submunitions contribute to an existing mine/ERW problem that impedes development and stability.

Capacity to respond

Sudan's National Mine Action Authority is responsible for mine action policy, planning and budget at federal level. Implementation of mine action is under the responsibility of the National Mine Action Center (NMAC) in the northern states, and of the South Sudan Regional Mine Action Center in the southern states. In addition, the UN mine action program is coordinated by UNMAO; activities include mine risk education (UNICEF) and victim assistance. Programs are mainly carried out by national and international NGOs and international organizations. Survivor assistance services and access to these services are limited everywhere outside of Khartoum.²⁰⁴

Recommendations

- Allow and implement nationwide data collection.
- Utilize existing data for planning and implementation of victim assistance programs rather than awaiting further assessment.

FOCUS: Southeast Europe

Cluster munitions were used in the Balkan region in conflicts resulting from the break-up of Yugoslavia. Both internal factions and North Atlantic Treaty Organization (NATO) forces used cluster munitions. Although remaining contamination appears to be relatively limited, the full scope of the human impact of unexploded ordnance is not known due to incomplete data. However, cluster munitions contamination has contributed to war devastation, delayed recovery, and still affects the rural poor, who are already among the poorest in Europe.

ALBANIA



Key findings

- The total number of cluster submunitions casualties is 56: 10 killed and 46 injured. Most casualties were caused by KB-1 and BLU-97 cluster submunitions.
- The areas contaminated with unexploded cluster submunitions are among the poorest in Europe.

Country indicators²⁰⁵

GDP (purchasing power parity): US\$20.21 billion (2006 est.)²⁰⁶

GDP - per capita (PPP): US\$5,600 (2006 est.)

GDP - composition by sector: (2006 est.)

- *agriculture:* 23.3 percent
- *industry:* 18.8 percent
- *services:* 57.9 percent

Labor force - by occupation: 1.09 million²⁰⁷ (September 2006 est.)

- *agriculture:* 58 percent
- *industry:* 15 percent
- *services:* 27 percent

Unemployment rate: 13.8 percent official rate, but may exceed 30 percent due to prevalence of near-subsistence farming. (September 2006 est.)

HDI: 0.784, Albania is ranked 73rd at the high end of the medium development group, but below nearly all neighboring countries, such as Bosnia and Herzegovina and Croatia.²⁰⁸

Measures of poverty and development: Albania is one of the poorest countries in Europe. Almost 25 percent of the population lives with less than US\$2 a day. Poverty is worst in rural areas in the northeastern districts of Kukës and Dibra, where some 80 percent of families' income comes from social protection schemes, economic assistance, and disability payments.²⁰⁹

Disability spending: N/A

Cluster munitions: country summary

Use period: Albania was not party to the conflicts which caused cluster munitions contamination. Cluster munitions contamination in Albania occurred as a result of use by Serbian forces during the 1999 Kosovo conflict and the North Atlantic Treaty Organization (NATO) aerial bombing during "Operation Allied Force" from March to June 1999.

Cluster submunitions used: The use of BLU-97, Mk118 (Rockeye), BL-755, KB-1 and KB-2 (Yugoslav) submunitions have been reported.²¹⁰ Both Serbia and the UK had BL-755 submunitions stocks at the time. The UK asserts that it did not drop RBL-755 cluster munitions on Albania.²¹¹ However, clearance staff reported that they believed that the BL-755 submunitions were UK-delivered. Submunitions casualties reported by Albanian Mine Action Executive (AMAE) involved either KB-1 or BLU-97.²¹²

Number of cluster submunitions used: N/A

Contamination estimate: The Albanian Mine Action Executive (AMAE) stated that 13 areas along the Kosovo-Albania border have been identified as contaminated with unexploded cluster submunitions.²¹³ The full extent of cluster submunition contamination is not known, but most contamination results from KB-1 submunitions. NATO also made at least six cluster munitions strikes along the Kosovo-Albania border.²¹⁴ By September 2000 Albanian explosive ordnance disposal (EOD) teams were reported to have cleared some 2,700 cluster submunitions in 16 areas.²¹⁵

Failure rate estimate: KB-1 submunitions failure rates have been reported as low as five to six percent on hard surfaces, while elsewhere failure rates of as high as 60 percent have been observed.²¹⁶ This is consistent with estimates for KB-1 failure rates of up to 66 percent in Croatia.²¹⁷ Failure rates for NATO-used munitions were estimated at between 20 and 25 percent in Albania. Failure rates were very dependent on surface conditions, vegetation, and weather conditions at the time of release.²¹⁸ NATO submunitions used in Kosovo have been found to have failure rates as high as 20 percent in some conditions, with an overall average of eight percent as the current estimate.

Number of recorded casualties: A total of 56 casualties have been recorded; 10 people were killed and 46 injured.

Estimated casualties: Most likely there are few more casualties than recorded in Albania.

Human impact measure

Casualty data analysis

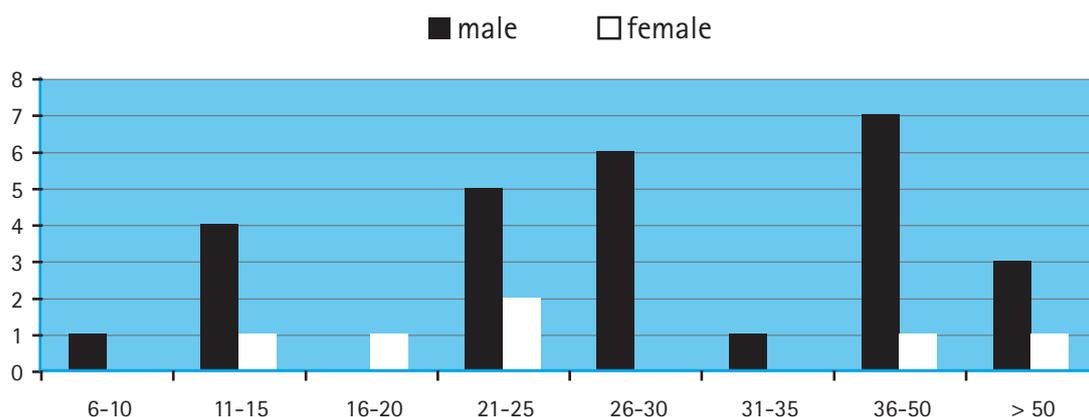
Between 1999 and 2006, 56 cluster submunition casualties occurred in 35 incidents and one training accident;²¹⁹ 10 people (one female and nine males) were killed and 46 injured (five females and 41 males). Of the total casualties, 54 were recorded by AMAE and two in other reporting.²²⁰

On 24 May 2004, a KB-1 submunition detonated during a training session for technical survey project personnel and caused 20 casualties (two people were killed and another 18 injured). The Board of Investigation noted that the accident pointed out the terrible effect that such submunitions can have and stated that the event "...underlines the fact [that] in the Northeast of Albania, there are still thousands of such submunitions...lying in the fields and waiting for victims."²²¹

Other than the 20 casualties in the classroom accident, according to AMAE casualty data at least eight people were killed and another 25 injured. Seventy percent of these casualties were men. In addition, four boys were injured. Five casualties were women, all of whom were engaged in livelihood activities, and a 15-year-old schoolgirl received severe body injuries while tampering with a cluster submunition. Sixty-six percent of these casualties were directly engaged in livelihood activities, mostly grazing cattle, farming, and tending animals. Forty-five percent of cluster submunition casualties from incidents which occurred during livelihood activities were recorded as being in marked danger areas at the time of the incident, indicating that economic need likely influenced risk-taking behavior.²²²

All but two known casualties occurred post-conflict. Of the known casualties, 33 were civilian.²²³ On average 1.7 persons were involved per incident and the mortality rate was nearly twice that of landmine casualties.²²⁴

casualties by age group and gender



Most impacted groups and areas

According to UNIDIR, over 80 percent of submunitions casualties (excluding the training accident) in the Kukës region occurred during economic activities, the majority of these being agricultural activities.²²⁵ The Kukës regional development initiative regards the removal of landmines and ERW as a priority for land access and the sustainable livelihoods of affected communities. Even without the problem of cluster submunitions contamination, many of the citizens of the Kukës Region cannot generate income from the small-scale agricultural activities they undertake; they primarily use their produce for own consumption.²²⁶ In Kukës some 80 percent of families' income comes from social protection schemes, economic assistance, and disability payments.²²⁷

Populations in hazardous areas often live on small farms and depend on grazing, farming, and gathering firewood for survival. These are also the activities that are likely to cause incidents with unexploded cluster submunitions. There is a lack of cultivable land in the border regions, where the majority of contamination is identified, exacerbating the risks.

More than 75 percent of the border area is mountainous, reducing the amount of arable land, and the land which is available is "usually affected by landmines or UXOs."²²⁸ Clearance operator DanChurchAid (DCA) gathers socio-economic data on the impact of mines and ERW on communities which is then used to establish priority tasks in accordance with community needs.²²⁹

In 2002, a survey by AMAE and CARE International in all three districts of Kukës indicated that economic need has contributed to villagers entering hazardous areas. A total of 69.9 percent of those surveyed stated a need to enter mine-affected areas. Almost a quarter of respondents stated they needed more land to graze animals, while 15.9 percent needed more land to collect firewood or winter animal feed. However, 1.7 percent also needed a way cleared so they could get to school.²³⁰

Impact conclusion

Regaining economic viability for an area is not just a matter of clearance, but needs to be linked to reconstruction and development, as it is reported that even once an area has been cleared, residents are still not able to return "because their homes, livestock and orchards have fallen into disrepair or were destroyed by shelling..."²³¹



Survey with community in Albania ©AMAЕ

Capacity to respond

The Albanian Mine Action Committee is the policy-making body for mine action, while AMAE is responsible for coordinating and monitoring mine action, including risk education and victim assistance. Albania has committed itself to building sustainable national capacity and to clearing all mine/ERW contaminated areas by December 2009. DCA is the only clearance operator in Albania. Risk education, not specifically for cluster munitions, and victim assistance are mostly carried out by NGOs and a community-based rehabilitation network supported by the UNDP and UNICEF. Albania tries to link its mine action policy to other relevant development and disability strategies. However, the needs of the impacted communities are not being met completely.²³²

Recommendations

- The mine/ERW issue needs to continue to be addressed within a broader framework of development and prioritization based on needs identified by the communities.
- Additional capacity-building will increase the chances of a sustainable and integrated mine action program, including risk education and victim assistance.

BOSNIA and HERZEGOVINA (BiH)



Key findings

- There were at least 92 cluster submunitions casualties, mostly during strikes.
- The typical profile of a post-conflict casualty is a male of working age carrying out livelihood activities.
- The cluster munitions problem is likely to be worse than estimated.

Country indicators²³³

GDP (purchasing power parity): US\$24.8 billion²³⁴ (2006 est.)

GDP - per capita (PPP): US\$5,500 (2006 est.)

GDP - composition by sector: (2002 est.)

- *agriculture:* 14.2 percent
- *industry:* 30.8 percent
- *services:* 55 percent

Labor force - by occupation: 1.026 million (2001 est.)

- *agriculture:* N/A
- *industry:* N/A
- *services:* N/A

Unemployment rate: 45.5 percent official rate²³⁵ (31 December 2004 est.)

HDI: 0.800, BiH is ranked 62nd out of 177 countries, penultimate in the high development group and in the bottom range in Europe, above Albania and below Croatia.²³⁶

Measures of poverty and development: BiH is one of the poorest countries in Europe. Some 19.5 percent of the population suffers from poverty and an additional 30 percent of the population is categorized as being vulnerable to poverty. The economy of BiH has not regained its pre-war level despite successes in post-conflict reconstruction.²³⁷

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used during the conflict in BiH by internal factions from 1992 to 1995, and at least once during NATO Operation Deliberate Force in August 1995.

Cluster submunitions used: Most of the submunitions used were KB-1. The forces of both the Bosnian government army and Bosnian Serb army are believed to have used, or to have had the capability of delivering, KB-1/KB-2 cluster submunitions.²³⁸ The Orkan, a rocket system that fires cluster munitions containing KB-1/KB-2 submunitions, was manufactured near Sarajevo.²³⁹ BL-755 submunitions were reportedly used in small amounts at the beginning of the conflict.²⁴⁰ Two CBU-87 cluster munitions each containing 202 BLU-97 submunitions were dropped by a US plane during NATO operations on BiH.²⁴¹

Number of cluster submunitions used: N/A

Contamination estimate: N/A

Failure rate estimate: The KB-1 failure rate has been estimated at five to six percent, with a failure rate of up to almost 70 percent under some environmental conditions.²⁴²

Number of recorded casualties: There were more than 92 cluster submunitions casualties (86 during strikes and six after the conflict).²⁴³

Estimated casualties: The total number of submunition casualties in BiH is not known, as available data is limited. However, an air strike during which cluster munitions were used indicates that there could be at least 60 more casualties.

Human impact measure

Casualty data analysis

The problem of cluster munitions in BiH is likely to be greater than estimated, as previously unrecorded casualties have been identified and new casualties continue to be recorded. Casualty data in its present form is inadequate to present an accurate picture of the human impact of cluster submunitions. Incomplete nationwide casualty data is collected by Bosnia and Herzegovina Mine Action Center (BHMIC) and cluster submunitions incidents are not clearly differentiated. Furthermore, no data collection or survey has been undertaken to assess the extent of cluster submunitions casualties during the strikes.

At least 92 cluster submunitions casualties have been recorded (13 killed and 79 injured). Of those, 86 occurred during strikes, resulting in at least 12 people killed and more than 74 injured. Six post-strike casualties, one person killed and five injured, have been identified.

■ During strikes

The total number of casualties during strikes is not known. Media reported that a cluster submunition exploded in a refugee camp in Živinice, south of Tuzla in 1995; 10 people were killed and 34 injured. Another cluster munition exploded in central Bosnia, killing at least two children and injuring more than 40 people.²⁴⁴ Airplanes from a Krajina Serb-held area in Croatia bombed the UN safe area of Bihać with cluster munitions in 1994.²⁴⁵

In 2005, residents of the Tešanjka area mourned the 10 year anniversary of an air strike that included cluster munitions which killed 9 and injured 51 civilians.²⁴⁶ However, these casualties have not been included in the totals above as it cannot be confirmed that cluster munitions caused the casualties.

In August 1995, a USAF A-10A dropped two CBU-87s during the first day of the NATO campaign as a result of an operational miscommunication. Cluster munitions use had previously been ruled out by US command due to the risk of collateral damage. The number of military casualties is not known. The US reported that there were no civilian casualties.²⁴⁷ Bosnian Serbs claimed that NATO strikes hit civilian targets in Banja Luka.²⁴⁸

■ Post-strike

There are at least six casualties from failed cluster submunitions. The most recent known casualty was reported in December 2006, when a 75-year-old woman was killed after her dog detonated a KB-1 cluster submunition while she was grazing sheep and goats near a village close to Mostar. Reportedly, cluster munitions were used in the area in 1993.²⁴⁹

Most impacted groups and areas

■ Clearance operators

At least five clearance operators have been reported injured by KB-1 cluster submunitions. Two deminers were identified as having been injured in separate accidents with KB-1 submunitions in 2002, one in Vogošća and one in Gornji Vakuf.²⁵⁰ Two deminers of the Stabilization Force in Bosnia and Herzegovina (SFOR) were injured in October 1999 when a KB-1 was disturbed in a house in a residential area of Hotonj, Vogošća.²⁵¹ An Italian SFOR EOD person was injured in Sarajevo in 1996 while defusing a KB-1; the fuse exploded and injured his right eye.²⁵²

■ Rural people

Based on the limited information available, farmers are likely to be amongst the groups most vulnerable to cluster submunitions incidents in BiH. After the death of a villager herding animals in 2006, locals in the area were reportedly afraid and kept their livestock in the stables rather than going out to graze.²⁵³

According to the Landmine Impact Survey (LIS), the typical profile of a casualty in BiH is a working-age male killed or injured while collecting wood, farming, or herding animals.²⁵⁴ Many rural people who had fled their land during the conflict returned to live off subsistence farming. Overall, BiH has an economy which is both a transitional and post-war economy. The economy of BiH has not regained its pre-war level; prior to the 1992-1995 war, BiH was a medium-income country within the former Federal Republic of Yugoslavia. The conflict transformed it into a poor country and the cost of war damage has been estimated at more than US\$100 billion.²⁵⁵ This has resulted in "socioeconomic devastation and loss of employment."²⁵⁶ ICRC statistics indicate that local residents of mine/ERW-affected areas suffered the highest number of casualties compared to refugees and internally displaced persons, as locals mainly conduct activities in dangerous areas due to economic necessity.²⁵⁷

BOSNIA AND HERZEGOVINA

Cluster munitions and casualties per canton

Legend

- | | | | | |
|---|------------------|---|---|------------------------|
|  | Country boundary | Casualties per canton |  | No casualties reported |
|  | Dangerous Areas |  | 1-4 casualties | |
|  | Major road |  | 44-45 casualties | |
|  | Country capital |  | Municipality with casualties | |
|  | Large town | | | |
|  | Small town | | | |

Boundary representation is not authoritative
 Cluster munitions used from 1992 to 1995
 Cluster submunitions casualties from 1995 to 2006

1/04/2007



Impact conclusion

The full scope of the human impact of cluster munitions is not known in BiH, as data collection is incomplete and most casualties occurred during strikes. However, poor people carrying out livelihood activities seem to be most vulnerable to the threat, regardless of how seemingly limited it is.

Capacity to respond

The Demining Commission is responsible for mine action policy and supervises the BiH Mine Action Center (BHMIC), which coordinates mine action with technical support from UNDP and UNICEF. Mine action, including risk education and victim assistance, is undertaken by national institutions, NGOs, the armed forces and commercial operators. BiH has a healthcare network of "a considerably good level," but other assistance sectors need improvement.²⁵⁸

The BHMIC does not consider submunitions to be a significant problem in BiH.²⁵⁹ However, submunitions-contaminated areas are noted separately in clearance operating procedures,²⁶⁰ and NPA has shown KB-1 submunitions amongst 10 of the most common ERW and mines found in Bosnia,²⁶¹ indicating that submunitions contamination does pose a threat in BiH.

Recommendation

- Improve referral for survivors by instigating substantial and rapid implementation of survivor assistance and focused casualty data management.

Community experience

"People are afraid. In the morning no one put their animals out to pasture... . We do not know what we are going to do with the livestock. Those with hay can feed them, those without will have to cull their cattle. Most people here are unemployed, so farming is their main source of livelihood," said 57-year-old Omer, a neighbor and relative of the recent cluster submunition casualty in the village. Another two unexploded cluster submunitions were found after the fatal incident.

According to BHMIC, Red Cross records show that 48 people have been killed by ERW in the outskirts of the Herzegovina-Neretva Canton region where the incident occurred.²⁶²

CROATIA



Key findings

- Most cluster submunitions casualties occurred during strikes: 206.
- In the post-strike period, boys playing are the most vulnerable group.

Country indicators²⁶³

GDP (purchasing power parity): US\$59.41 billion (2006 est.)

GDP - per capita (PPP): US\$13,200 (2006 est.)

GDP - composition by sector: (2006 est.)

- *agriculture:* 6.8 percent
- *industry:* 30.9 percent
- *services:* 62.3 percent

Labor force - by occupation: 1.72 million (2006 est.)

- *agriculture:* 2.7 percent
- *industry:* 32.8 percent
- *services:* 64.5 percent

Unemployment rate: 17.2 percent official rate, surveys indicate approximately 14 percent (2006 est.)

HDI: 0.846, Croatia is ranked 44th out of 177 countries in the high human development group, above many neighboring countries in Europe such as Albania and Bosnia and Herzegovina, but below most of central and western Europe.²⁶⁴

Measures of poverty and development: Overall, about 11 percent of the population is reported to be below the national poverty line, with large regional differences. A large portion of the poor are outside the work force or the state social security system and have not shared in the benefits of the post-conflict economic growth.²⁶⁵

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by the forces of the self-proclaimed Republic of Serbian Krajina (RSK) between 1991 and 1995 during regional conflicts – most notably on 2 and 3 May 1995.

Cluster submunitions used: The vast majority of submunitions used were KB-1 or KB-2. Some BL-755 air-delivered cluster submunitions were reportedly also used.

Number of cluster submunitions used: N/A

Contamination estimate: The total extent of cluster submunitions contamination is not known. The most frequent use of KB-1 submunitions was in the vicinity of the Vransko lake area, in Gospić and Maslenica in Zadar County.²⁶⁶ During a May 2006 clearance project of agricultural and forest areas in Smiljan, some seven kilometers from Gospić, 68 KB-1 submunitions were found on 220,000 square meters. Some submunitions were buried at depths of up to 30 centimeters.²⁶⁷

Failure rate estimate: A failure rate of between 33 and 66 percent is estimated for the KB-1 type submunitions used in Croatia.²⁶⁸ A failure rate of around seven percent has been reported for the BL-755 submunitions used in Croatia.²⁶⁹ Twelve Orkan rockets containing 288 cluster munitions each were fired at Zagreb and surrounding areas over two days.²⁷⁰ Some 1,600 unexploded submunitions remained in Zagreb from cluster strikes during 2-3 May 1995 and were cleared in the following days.²⁷¹ This would indicate a failure rate of at least 46 percent.

Number of recorded casualties: There are 237 known cluster submunitions casualties. The majority, 206 casualties, occurred during strikes.²⁷²

Estimated casualties: It is likely that there are significantly more casualties than those recorded because casualty records cover neither the period of greatest cluster munition use nor the period immediately after contamination.

Human impact measure

Casualty data analysis

Confirmed casualties: 1993–2006				
	Total	Strike	Post-strike	Post-conflict
Grand total	237	206	23	8
Injured	217	197	15	5
Killed	20	9	8	3
Unknown status	0	0	0	0
Man	120	111	4	5
Woman	80	77	1	2
Boy	21	9	12	0
Girl	11	9	1	1
Military	1	0	1	0
Deminer	4	0	4	0
Unknown	0	0	0	0
Dominant activities	Playing and livelihood			
Dominant location	Near home			

KB-1 submunitions have caused all 237 known cluster submunitions casualties (20 people killed and 217 injured).

Casualties from cluster submunitions are differentiated from casualties caused by other devices, but the total number of cluster submunitions casualties is unknown since few conflict casualties were recorded. A full data set of the more than 2,800 mine/ERW casualties occurring between 1991 and 2006 does not exist, as only 50 percent of the CROMAC casualties registered have complete details.²⁷³

■ Casualties during strikes

Of the total 237 known casualties, 206 casualties resulted directly from cluster munition strikes (nine killed and 197 injured). All but three (203) occurred during the bombing of Zagreb and surrounding areas on 2 and 3 May 1995. Of the other recorded strike casualties, one man was injured in Nin, Zaton in January 1993, and a man and a woman were injured in Gospić in September 1993.

Of the casualties resulting from the strikes, 58.7 percent (120) were male, including at least nine boys, and 41.7 percent (86) were female, including at least nine girls. The age of 17 people injured during the strikes is not known.²⁷⁴

According to a Croatian Ministry of Health Report, almost three percent of casualties were foreign nationals, including one citizen of Bosnia and Herzegovina, one citizen of Poland, one citizen of Russia, and three citizens of Romania.²⁷⁵

At least 124 people in Zagreb sustained severe injuries and suffered permanent physical disability due to the cluster submunition strikes.²⁷⁶ In addition to injuries sustained directly by cluster submunitions, many people suffered minor injuries from broken glass and collapsing structures as an indirect result of the strikes.²⁷⁷

The numbers of casualties from the strikes in Zagreb are likely higher. According to investigating police officers, among the injured from the Zagreb cluster strikes there were "well over 100 heavily wounded and well over 100 which were lightly wounded."²⁷⁸ Another officer stated the number of recorded casualties came to "a total of 218 civilians, including the fatalities."²⁷⁹

■ Casualties due to unexploded cluster submunitions

CROMAC data includes 31 casualties resulting from incidents involving failed cluster submunitions. There were 23 casualties in the post-strike period (1993–1996) and eight in the post-conflict period (1997–2006) for a total of 31, of which 11 were killed and 20 injured. Civilians constituted some 86 percent of the total recorded casualties. Males accounted for 82 percent of all casualties resulting from failed cluster munitions.

Most impacted groups and areas

People seem to have been most impacted during cluster strikes, as cluster munitions were targeted at densely populated civilian areas in the very center of Zagreb. However, rapid clearance (most submunitions cleared within 15 days) combined with public awareness and risk education measures prevented high casualty numbers due to failed submunitions. Many submunitions were in a highly sensitive state. During the first two days of clearance, failed submunitions explosions caused two clearance casualties; one man was killed and the other injured, resulting in the amputation of his arm. The strikes also caused great fear and uncertainty amongst the population of Zagreb.²⁸⁰ Submunitions explosions caused damage within the hospital, to trams, to the building of the Croatian National Theatre, and to over 100 cars.²⁸¹

Among the 31 casualties of failed cluster submunitions, four were involved in clearance and one was military. Most casualties (23) occurred in the post-strike period on record for 1993–1996, with a gap of three years in data collection from 1996 to 1999.

Children were a significantly impacted group, making up more than half of the 26 civilian casualties after the strikes. Of the 14 child casualties, 12 were boys playing during the emergency post-strike period. At least eight of the boys were playing in or near a home. Playing was the most common activity, followed by clearing the house/yard (four), collecting scrap metal (two) and herding (two).

■ Socio-economics and casualties

Civilian casualties caused by unexploded submunitions are spread across the economic spectrum of the 21 counties in Croatia.²⁸² However, casualty data indicates that even in the more economically prosperous regions, such as Zagreb (four post-strike casualties) and Lika Senj (six), poor people and rural people are disproportionately affected. This is reflected in the activity, location, and occupation of casualties at the time of the incident. For example: in Gospić, Lika-Senj county, a 17-year-old girl was injured and a 20-year-old woman was killed while collecting scrap metal at a rubbish dump on 31 December.

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives		✓	
2 Impact on resources	✓		
3 Impact on public sector	✓		
ST SUBTOTAL	2	2	
T TOTAL			4

Impact conclusion

As civilian areas were targeted, there was sizeable damage to civilian infrastructure, such as damage within hospitals, to trams and to other civilian infrastructure.²⁸³ The greatest cost was in human life and human suffering. CROMAC reports that cluster munitions were used most extensively in 1991.²⁸⁴ However, there is only incomplete casualty data available for incidents prior to 1993. As a result, casualties during this frequent use period go unreported, leaving the post-strike period in which most incidents are likely to occur uncovered as well.

Immediately after the strikes, boys playing were most affected by unexploded cluster submunitions. Poor and rural people were affected most in the post-conflict period.

Capacity to respond

The Croatian Mine Action Center Council functions as the national mine action authority and oversees the work of CROMAC. CROMAC is responsible for coordinating mine action activities, including risk education and victim assistance. Mine action is carried out mainly by NGOs and commercial organizations (demining), but victim assistance is implemented in cooperation with the Ministry of Health and the Ministry of Foreign Affairs. Croatia has a well-developed public health infrastructure and system.²⁸⁵

Recommendation

- Utilize cluster munitions use in a case before the International Criminal Tribunal for the former Yugoslavia in order to establish a precedent.

Community experience

Zagreb: On 2 May 1995, 17-year-old Raseljka and a school friend were injured by a cluster submunition explosion. This account is taken from her testimony at the International Criminal Tribunal for the former Yugoslavia:

"My school was located in the centre of Zagreb in Krizaniceva Street...between my school and Ban Jelacic Square, which is the very heart of Zagreb, it is some 10 minutes on foot. [W]hen we left our classroom we were the only ones in the corridor... . And a few seconds later we heard an explosion, and the window pane shattered and showered us with its pieces. Immediately after that, the students began pouring out of their classrooms... they told me and my friend to wait to be taken to a hospital by someone... . There was great commotion in the hospital, as many people had come over. They were in the waiting room, everywhere around, even seated on the floor. As my injuries were not that severe, it was only one or two hours later that I was taken to be X-rayed... I was told that I had a piece of shrapnel in my left shoulder...and pieces of glass in my left eye. I also suffered surface injuries to my face and arm... After that I felt anxious. I failed to attend school for a while, although the classes continued, because I was afraid that something similar could happen again."²⁸⁶

KOSOVO²⁸⁷



Key findings

- Cluster munitions were used by NATO.
- At least 196 cluster submunition casualties recorded in Kosovo; more than half of the post-strike casualties were children.
- Cluster munitions primarily contaminated the agricultural and forest areas of Kosovo.
- Cluster submunition incidents involved serious injuries, often resulting in complex surgery including amputation.

Area indicators²⁸⁸

GDP - per capita (PPP): US\$2,660

Unemployment rate: 44 percent (2005 est.)

HDI: 0.734, Kosovo is ranked below Albania, Bosnia and Herzegovina [and Serbia].

Measures of poverty and development: Just over 47 percent of the total population lives on less than US\$2 per day and 65 percent of the population lives in rural areas.²⁸⁹ Illiteracy and the number of people living on less than US\$2 per day are more prevalent in rural areas, where widespread reliance on subsistence farming masks the lack of employment.²⁹⁰

Disability spending: N/A

Cluster munitions: area summary

Use period: Cluster munitions were used from 24 March to 10 June 1999 during NATO Operation Allied Force.²⁹¹

Cluster submunitions used: NATO used BLU-97, RBL-755 submunitions and CBU-99 and CBU-100 cluster munitions.²⁹²

Number of cluster submunitions used: In 1999, NATO informed the United Nations Mission in Kosovo (UNMIK) Mine Action Coordination Center (MACC) that 1,392 cluster munitions containing 289,536 submunitions had targeted 333 strike locations within Kosovo.²⁹³

Contamination estimate: In 2007, the Office of the Kosovo Protection Corps Coordinator (OKPCC) EOD Management Section reported that 61 cluster munitions hazard areas remain, mainly in the west of the country.²⁹⁴ All known strike areas were reported to have been cleared to international standards by 2002.²⁹⁵ However, clearance data indicates that at least 18,318 cluster submunitions were destroyed between June 1999 and 2005.²⁹⁶ Based on NATO information and an estimated overall failure rate of around eight percent,²⁹⁷ some 23,000 to 28,000 submunitions would have remained.²⁹⁸ When extrapolating from clearance results between 1999 and 2001, as many as 30,000 individual submunitions may have remained in Kosovo.²⁹⁹

Failure rate estimate: The overall failure rate estimate for the submunitions used in Kosovo is about eight percent according to NATO and ICRC (seven percent for BLU-97 and 11 for RBL-755).³⁰⁰ However, failure rates as high as 20 percent were also recorded in some areas of Kosovo.³⁰¹ Official failure rates are around five percent for both submunitions.³⁰²

Number of casualties: 196 casualties have been recorded, 25 during strikes and 171 in incidents caused by failed submunitions.

Estimated casualties: Based on existing casualty data and reports by practitioners, an estimated 300 to 500 people have been killed or injured by cluster submunitions in Kosovo.

Human impact measure

Casualty data analysis³⁰³

Confirmed casualties: 1995–2007				
	Total	Strike	Post-strike	Post-conflict
Grand total	196	25	156	15
Injured	135	25	103	7
Killed	61		53	8
Unknown status	0		0	0
Man	52		41	11
Woman	5		5	0
Boy	87		85	2
Girl	1		1	0
Military	32	25	7	0
Deminer	15		13	2
Unknown	4		4	
Dominant activities	By-standing/passing by (49)			
Dominant location	Djakovica (31)			

The use of cluster submunitions resulted in at least 196 casualties, 25 of which occurred during strikes and 171 of which occurred due to submunitions that failed to detonate upon initial impact.

No single comprehensive source of casualty data for Kosovo is available. Between 1999 and 2001, the ICRC was the lead agency for data collection on mine/ERW incidents and collected the vast majority of casualty data stored and verified by the MACC in IMSMA.³⁰⁴ Since 2002, the Institute of Public Health (IPH) within the Ministry of Health has been responsible for investigating and recording all incidents involving mines, submunitions and other ERW in Kosovo, and the MACC files were transferred there.³⁰⁵

However, the original MACC records for 1999 to 2001 could not be accessed after transfer to the IPH,³⁰⁶ and maintenance of the database was a concern.³⁰⁷

The original casualty data for 1999–2001 appears to have contained information on name, status, place, age, gender, activity, injuries, warning marking, contact information, and often a brief note regarding the incident. Such information is useful for coordination of support to cluster munitions survivors referrals, ongoing medical care, socio-economic reintegration, and psychological support.³⁰⁸

■ Casualties during strikes

All casualties (25) recorded during strikes were military and all were injured.³⁰⁹ The number of civilian casualties during strikes is not known. However, the head of orthopedic surgery at Pristina's largest hospital estimates that his team treated 300 to 400 people injured by cluster munitions during the NATO bombing.³¹⁰ The doctor stated that there were more civilian casualties than military casualties treated at the hospital, "especially in the last three weeks, as NATO had moved into the phase of bombing moving targets...".³¹¹ HRW reports over 300 possible cluster munition strike casualties. Among these were at least 19 people killed and a further 55 injured. However, many of the incidents could not be verified and have therefore not been included in the casualty total.³¹² Considering that the majority of cluster munitions during the NATO operation were used in Kosovo,³¹³ the 78 civilian casualties during strikes in Serbia proper might give an indication that significant numbers of casualties were likely in Kosovo.

Concerns of excessive civilian harm by cluster munitions were expressed by countries involved in the NATO campaign before, during and after the operation. The US military avoided the use of the same cluster munitions in Kosovo specifically "because their inaccuracy and wide dispersion pattern made them likely to cause collateral damage" in Bosnia and Herzegovina in 1995.³¹⁴ It also suspended its use of cluster munitions in Kosovo from 14 May to 2 June 1999 due to problems of inaccuracy, attributed to a flaw.³¹⁵ Similarly, the Netherlands suspended its use of cluster munitions in Kosovo "due to the risks of unintended collateral damage."³¹⁶ In early 2007, the UK decided to destroy its stockpiles of RBL-755 and similar munitions due to concerns about civilian casualties they can cause.³¹⁷ Some 60 percent of the RBL-755 cluster munitions used by the UK in Kosovo were reported to have either missed their intended target, or their point of strike was not known.³¹⁸

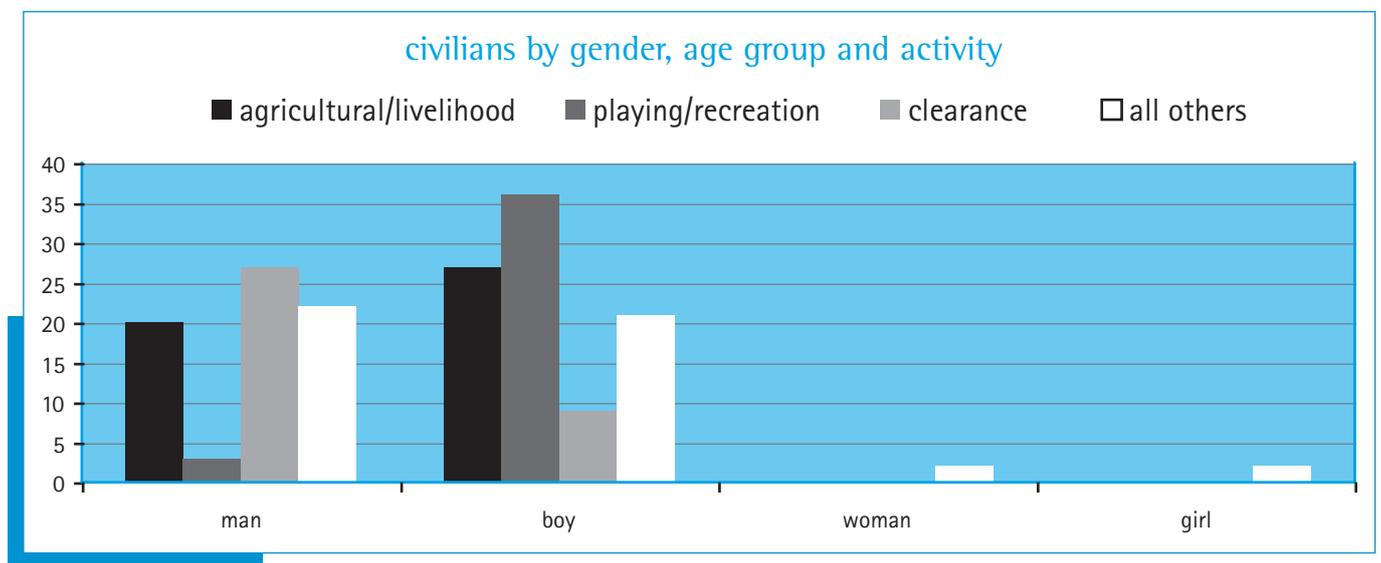
■ Casualties of failed cluster submunitions

The vast majority of casualties due to unexploded cluster submunitions (156) occurred during the emergency post-strike period (March 1999–August 2000) when the risks of civilian casualties were greatest. In the post-conflict recovery period of 2001–2007, casualties decreased due to major clearance and substantial risk education activities; only 15 casualties were recorded.

After strikes, 145 casualties were civilian (87 boys, 52 men, five women and one girl). Amongst non-civilian casualties, seven were military or paramilitary personnel and 15 deminers or clearance workers. Details about four casualties are unknown.

Individual cluster submunitions incidents were usually responsible for causing multiple civilian casualties. Almost 60 percent of all submunitions incidents resulted in two or more casualties, the average casualty rate per incident being 2.4. The most common "activity" recorded was passing or standing nearby, at 29 percent (49 people). Of those, 17 casualties occurred in incidents involving submunitions clearance. Four of the five known women casualties were recorded as "passing by".

Reportedly, more than half of the casualties treated by a British surgeon working in Kosovo in August 1999 were due to cluster submunitions, another indication of the large number of injuries the submunitions caused.³¹⁹ In addition to incomplete data, there is also evidence of incorrect device type identification in the existing data and subsequent underreporting of cluster submunitions casualties. At least seven casualties among the 54 casualties by unknown devices from June 1999 to November 2000 were probably caused by failed cluster submunitions.³²⁰



Most impacted groups

■ Returnees

The ICRC draws attention to the problem that internally displaced persons (IDPs) and returnees are particularly at risk from mine/ERW contamination as they have "neither the knowledge of the threat nor the knowledge of its geographical location..."³²¹ After the NATO bombing campaign ended, ICRC noted a peak in the number of mine/UXO casualties, saying that "...half of all mine/UXO victims between June 1999 and June 2000 were killed or injured during June and July 1999, while returning from Macedonia and Albania."³²² This corresponds with a similar peak in cluster submunition casualty numbers in the existing casualty data. Approximately 53 percent of cluster munitions casualties for the year occurred during the two months of June and July 1999.

The refugee and IDP casualties both during and after strikes are likely higher than those recorded. For example, an 11-year-old boy was seriously injured by an unexploded cluster submunition in May 1999 but was not recorded as his family fled with him to Serbia in December 1999.³²³

The emergency phase of the Kosovo mine action program, including cluster submunition clearance, allowed crucial support services for the return of refugees and internally displaced people. However, even after their return, a large proportion of the population was reportedly camping near their houses and access to the surrounding areas remained obstructed.³²⁴ The aim of the initial mine action strategy, which also included MRE, was to "ensure the rapid, safe return of refugees and IDP to their villages and to allow the resumption of normal activities, free from the threat of mines."³²⁵ Overall, access to sufficient food in Kosovo was problematic in the first year after NATO bombing ended. At its peak, food distribution covered almost 70 percent of the population of Kosovo.³²⁶ This likely resulted in people being forced to work their fields or gather food in forest areas.

■ People carrying out livelihood activities

When cluster munitions strike locations are matched with data on 108 casualties between June 1999 and 2000 in the LIS, 84 percent (91) occurred in livelihood areas: 49 in agricultural areas, 27 in woodland/foraging areas, and 15 in mixed agricultural/forest land.³²⁷ Most casualties occurred in the western provinces, especially the most fertile agricultural areas of Prizren, Djakovica, Decani, and Gora. Other incidents happened in the south (Stimlje and Suva Reka) and three incidents were recorded in Podujevo in the far east of Kosovo. In rural areas, about 55 percent of households have livestock, and 15 percent live off their own food products.³²⁸

At least 53 people, 32 boys and 21 men (27 percent of casualties after strikes) were involved in livelihood activities at the time of the incident. Of these, 32 casualties occurred during incidents that involved tending animals and at least six more in other farming activities. However, this does not mean this was necessarily the activity that was recorded.³²⁹ In particular, the numbers of children involved in herding at the time of an incident were often higher than recorded in casualty data. For example, in October 1999 in Urosevac, of four boy casualties, two are recorded as having been involved in tampering and two in playing/recreation. However, in a newspaper article, Burim, the 12-year-old survivor reports, "It was yellow... My friends poked it with a stick. Then I had my eyes on one of the cows and I stepped on it."³³⁰

Fifteen percent of casualties (25 people) were recorded as "tending animals" at the time of the incident; all were male. Of these 80 percent (20) were boys; almost half of the total (13) were boys under 15 years old. At least nine casualties were involved in incidents associated with collecting food, water or wood. An estimated 10 percent of the overall population of Kosovo relies on forestry production for their livelihood, including 20 percent of the rural population.³³¹ The aid agency CARE noted that "families who traditionally gather wood from the forests were unable to do so because of the threat of mines and unexploded bombs."³³² It also is likely that many people were not properly aware of the risks when undertaking livelihood activities in the post-strike emergency period. Reports indicate that risk education was inadequate and uncoordinated during much of the emergency post-strike period.³³³

Submunitions contamination in agricultural and forest areas was often high, as submunitions landing on soft ground and vegetation had a higher failure rate and FRY forces often used vegetation in agricultural areas for cover.³³⁴ Reportedly, NATO intentionally used cluster munitions in the countryside rather than in urban centers to avoid collateral damage;³³⁵ however, this has caused long-term concerns in areas where most of the

population finds its livelihood. In Kosovo, agriculture, primarily on small semi-subsistence farms, provides most employment and is the main economic activity.³³⁶ Subsistence farmers suffer the highest incidences of poverty and extreme poverty in Kosovo and therefore have the greatest need to utilize the land they do have.³³⁷

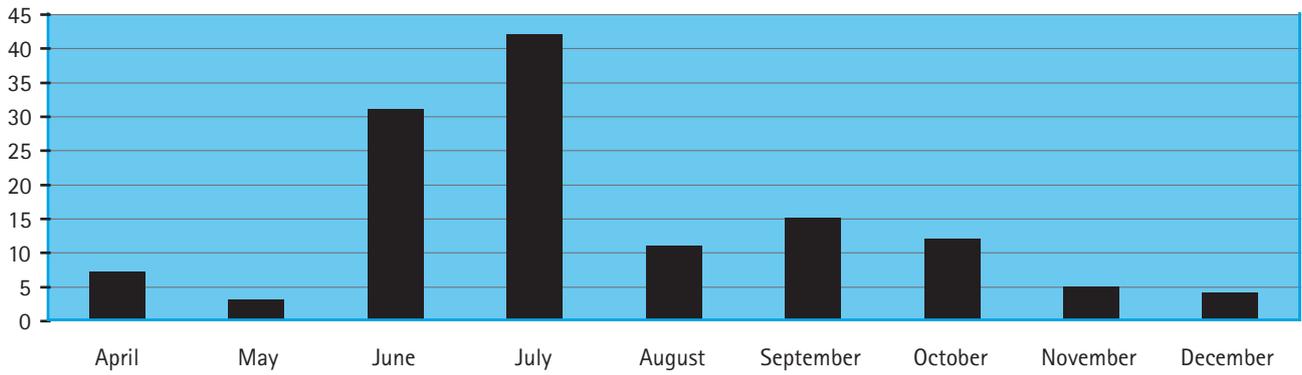
Tampering caused 12 percent (21) of casualties, of which over half can be associated directly with play and recreation activities (7) and livelihood activities (4) which brought the casualties into contact with submunition contamination. The only girl casualty was recorded as an incidence of tampering in the post-strike period.

■ Boys

Of the 88 child casualties known, 85 of the children were boys under 18 killed or injured in the emergency post-strike period. They constitute 62.5 percent of civilian casualties in that period. Two boys became casualties in the post-conflict period. Particularly in the post-strike period, it was clear that cluster munition incidents "generally involved groups of younger people, often with very tragic results."³³⁸ Casualty data confirms this: 87 percent of children were involved in incidents with more than one child casualty. Incidents with multiple child casualties constitute 23 of 33 the incidents with children. In addition, there were at least three more incidents with one child casualty, where other children escaped harm or were not recorded.

UNICEF states that "...unexploded ordnance violate nearly all the articles of the Convention on the Rights of the Child (CRC)" including a child's right to life, to a safe environment in which to play, and to health.³³⁹ This is accurate in the case of unexploded cluster submunitions in Kosovo, where cluster munitions created an unsafe environment and killed and injured more children than adults. The Director of the MACC was quoted as saying of submunitions: "We did not anticipate the number of them used and their attractiveness to kids." Thirteen boy casualties are specified as being involved in playing or recreation at the time of the incident, and another 22 boys were involved in incidents where other casualties were reported as playing. Yet, of the three nations which used cluster munitions in the NATO operation, one (the USA) was a signatory to the Convention on the Rights of the Child, while the other two (the UK and the Netherlands) had ratified it.³⁴⁰ The Netherlands has viewed the human impact of cluster contamination in Kosovo as a significant problem and formally proposed to put the subject of ERW on the agenda of the Convention on Conventional Weapons. Its interest in the issue is in part based on its "direct involvement in the NATO Kosovo campaign... [that] left many unexploded submunitions exerting a humanitarian toll as significant as the casualties caused by mines."³⁴¹

post-strike casualties: 1999



■ People involved in clearance

Clearance of cluster munitions and landmines was a vital aspect of the reconstruction process.³⁴² However, at least 36 casualties (about 18 percent of known casualties) occurred during clearance accidents. Five were KFOR peacekeepers, at least four were national deminers, and four incidents involved former Kosovo Liberation Army (KLA UCK) members. "In many cases accidents occurred because Albanian males, some former [KLA] members deliberately moved or tapered with bomblets," for example, in Djakovica, in July 1999, three people were killed and seven injured when former KLA soldiers tried to open a submunition with a knife.³⁴³ According to a study in 1999, 19 percent of the 75 mine/ERW survivors interviewed in hospital were injured during demining efforts by the KLA.³⁴⁴ Some clearance activity was expected of the KLA, as it had committed to remove all the landmines it had laid.³⁴⁵ Former KLA soldiers are known to have worked together with KFOR in at least one instance in which a submunition clearance accident occurred.³⁴⁶ Furthermore, there was a gap in the military clearance of cluster submunitions that left an opportunity for civilian and former KLA clearance; the peacekeeping force in Kosovo (KFOR) led by NATO confined their clearance operations to areas essential to their mission. This lack of early intervention left the population dangerously exposed to unexploded submunitions.³⁴⁷

KOSOVO

Cluster munitions and casualties per municipality in Kosovo province

Legend

Country boundary

Kosovo boundary

Municipality boundary

Province capital

Major city

Cluster munitions strikes

Casualties per municipality

No casualties reported

1 - 10 casualties

11 - 20 casualties

21 - 31 casualties

Boundary representation is not authoritative
 Cluster munitions used from 24 March 1999 to 10 June 1999
 Cluster submunitions casualties from 1999 to 2006

1/04/2007



Major areas of impact

Cluster munitions casualties have been recorded in 20 municipalities, with most casualties³⁴⁸ recorded in Djakovica (31). Five other municipalities recorded over 10 casualties each: Mitrovica (14), Urosevac (13) Kacanik (14), Podujevo (12) and Prizren (15).

■ Cluster munitions and human security

Casualty data shows that some 63 percent of cluster munition casualties were injured in the incident, including many injuries that are likely to cause significant disability, such as amputation, (partial) loss of eyesight or hearing, and numerous types of shrapnel injuries leading to long-term physical incapacity. Doctors stated that cluster submunitions "cause extreme trauma in the survivors, many with severe wounds in the arms and legs, and in some cases, amputations."³⁴⁹

It is remarked that "available data point to a strong association between poor health or disability status and joblessness that may explain the higher incidence of extreme poverty observed... among households with disabled members."³⁵⁰ For people with disabilities, economic problems arise both from the lack of employment opportunities and from social benefits not being sufficient to buy essentials.³⁵¹ About 70 percent of those with disability in Kosovo live in rural areas without medical, institutional, social, or educational support.³⁵²

Physical disability among family members has been shown to have a negative influence on the economic status of households in Kosovo. According to information from the 2002-2003 Household Budget Survey (HBS), households with disabled members have a higher incidence of extreme poverty. The extreme poverty headcount is 17.9 percent among households with one or more members with disabilities and 14.3 percent among households with no disabled members.³⁵³

The death of a working-age male in Kosovo can have serious economic consequences for the families of those killed. A significant number of casualties in Kosovo were male adults, 26 of whom were killed in the incident. In Kosovo, female-headed households are significantly poorer than male-headed households. The risk of extreme poverty in a female-headed household, at 28.2 percent, is almost twice as high as for male-headed households, at 14.6 percent.³⁵⁴

Mines and ERW also "drain resources from an already depleted health system." Immediately following the end of NATO campaign, between 35 and 42 percent of hospital beds in the surgical and orthopedic wards were occupied by mine/ERW casualties in some areas.³⁵⁵ Surgeons in Serbia treating injuries from the same types of submunitions during NATO bombing noted that the injuries often required complex surgery including skin grafts and resulted in a higher percentage of amputation compared to other ordnance and small arms.³⁵⁶ This contributed to the lack of available resources for orthopedic surgery and secondary care in the months after the conflict. Pristina Hospital, the main hospital servicing the population of Kosovo, was stripped of most of its medical equipment by the end of the conflict.

■ Blocked land

The extent to which cluster munitions have blocked land access is not fully known. However, the presence of cluster bombs has been noted as one of the post-conflict constraints to land cultivation in Kosovo.³⁵⁷ In 2000, UNICEF stated that three percent of the land in Kosovo was affected by mines/ERW.³⁵⁸ ICRC reported that some fields, forests and vineyards could not be used due to submunitions contamination.³⁵⁹ In 2006, HALO Trust reported some five sites of submunitions contamination which locals say continue to deny them access to land, or areas that they were afraid to use.³⁶⁰

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives		✓	
2 Impact on resources		✓	
3 Impact on public sector	✓		
ST SUBTOTAL	1	4	
T TOTAL			5

Impact conclusion

The impact on survivors is compounded by a lack of casualty information to provide follow-up services and a lack of opportunities for people with disabilities. In rural regions in Kosovo, cluster munitions-affected areas are those experiencing the greatest levels of poverty, amplifying the impact of inaccessibility to resources that the submunitions contamination has caused, particularly for returnees in the emergency post-strike period. Submunitions contamination has extensively impacted the fragile and under-resourced post-war medical capacities.

Capacity to respond

Responsibility for coordination of programs aimed at reducing the risk from mines and ERW, including cluster submunitions, in Kosovo are held by the Office of the Kosovo Protection Corps Coordinator (OKPCC). Technical support is provided by UNMAS. Mine clearance and EOD have been undertaken by the Kosovo Protection Corps (KPC), KFOR, international NGOs and one commercial operator.³⁶¹ Risk education activities in Kosovo are focused on the threat of cluster submunitions and landmines and uses different methods for various age-groups, as well as public information dissemination.³⁶²

There is no specialized program in Kosovo to assist people with disabilities, including cluster munitions survivors. Medical support capacity is extensive but only lower-limb prostheses are available in Kosovo; obtaining upper-limb prostheses requires travel to the neighboring Former Yugoslav Republic of Macedonia. A range of NGOs are working with mine/ERW survivors and persons with disabilities. Peer-to-peer and professional psychosocial support services are available.³⁶³

Recommendations

- Restore casualty data and upgrade information management to ensure survivors are able to receive referral and services.
- Following a needs survey, provide assistance to people with disabilities, particularly in rural areas and their communities.

Community experience

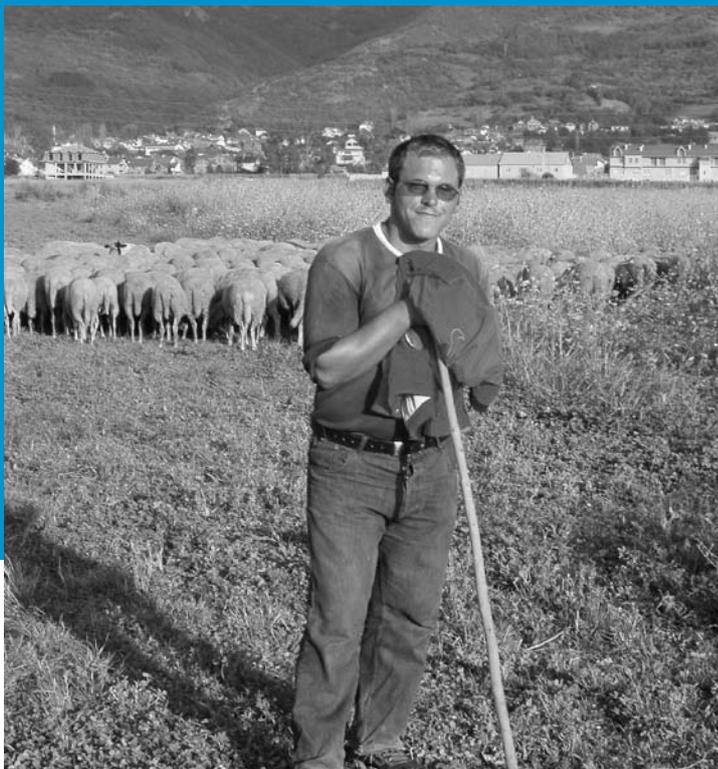
Fikret was 19 when he was seriously injured by a BLU-97 cluster submunition on 16 May 2004.

On that day, one of his family's sheep activated a cluster submunition which had been in a trench, unexploded, since the 1999 bombings. Fikret was standing 10 meters away. He was thrown to the ground and sustained injuries to his head, his left eye, his neck, his torso and his left arm. An employee standing more than fifty meters away also was struck by shrapnel in his forehead. The submunitions explosion killed 13 of the 150 sheep owned by Fikret's family.

After being rescued, Fikret was taken to the KFOR base hospital where he spent two and a half months recovering. Afterwards, he was transferred to Pristina hospital for an operation to remove his left eye, which could not be saved. Fikret's left arm and his left leg were seriously injured. The injury to Fikret's left arm poses a serious obstacle as he is left-handed.

Due to his injuries, Fikret had to cease studying to become a welder at technical college. He is also no longer able to help his brother repair trucks as he did in the past. Fikret says that the incident stopped his dreams. It has been hard for him to adapt. He remains active by continuing to herd sheep. Fikret receives a pension of just 50 euros a month from the Ministry of Health.

- Notes from casualty data illustrate situations in which submunition incidents caused multiple casualties amongst children. On 20 September 1999, in Vitina, five children were playing in a field... They discovered four yellow and black UXO, i.e., BLU-97. The children started poking the objects with sticks and throwing rocks at them, at which time one of the CBUs detonated, killing three of the children.
- An incident report in the casualty data for a 13-year-old boy who was out herding when injured by a cluster submunition in June 2000 states: "As a result of my investigation I have ascertained that the children were playing with CBU and that, as a result of a 'game of catch' the CBU detonated."



MONTENEGRO



Key findings

- At least two civilians were killed and another six injured by cluster submunitions.
- Cluster munitions destroyed significant amounts of property and livestock in a small rural community.
- Submunitions remain unexploded in at least two areas and disrupt access to natural resources, causing fear in the affected communities.

Country indicators³⁶⁴

GDP (purchasing power parity): US\$3.394 billion (2006 est.)

GDP - per capita (PPP): US\$3,800 (2005 est.)

GDP - composition by sector: N/A

Labor force - by occupation: 259,100 (2004 est.)

- **agriculture:** two percent
- **industry:** 30 percent
- **services:** 68 percent

Unemployment rate: 27.7 percent (2005 est.)

HDI: N/A

Measures of poverty and development: Absolute poverty in Montenegro affects between 8.4 and 13.6 percent of the population. In the rural regions of Montenegro, poverty is much higher than the national average. For example, in northern Montenegro, poverty rates average 19 percent.³⁶⁵ Extremely poor and socially excluded groups include the Roma, internally displaced people and some rural poor. A significant portion of the population is vulnerable to poverty.³⁶⁶

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by NATO "Operation Allied Force" from March to June 1999.

Cluster submunitions: Munitions used include RBL-755, BLU-97 and Mk118 (Rockeye).³⁶⁷

Number of cluster submunitions used: N/A

Contamination estimate: A survey examining the full extent of cluster munitions contamination in Montenegro is in progress. The municipality of RoŃaje on the border with Serbia was contaminated during NATO air strikes. Contamination is primarily in the vicinity of the villages of Besnik and Njeguši.³⁶⁸ A general survey carried out in the area of these two villages identified a hazardous area of BL-755 cluster munition contamination of 394,700 square meters.³⁶⁹ Another area suspected of contamination is around a military airfield at Golubovci, Podgorica city, including the surrounding villages of Golubovci, Šipcanik, Gošići and Mataguži.³⁷⁰

Failure rate estimate: The failure rates of submunitions in Montenegro are not known, but may be as high as 20 percent, because the Serbian Mine Action Centre and Norwegian People's Aid (NPA) have identified failure rates of up to 20 percent for the same submunitions in Serbia.³⁷¹ Various estimates have been made of the failure rates of cluster submunitions in the nearby province of Kosovo during NATO "Operation Allied Force". In some areas of Kosovo, submunitions failure rates as high as 20 percent have been reported as well.³⁷² The current overall failure rate estimate for Kosovo is eight percent.³⁷³

Number of casualties: At least eight cluster submunitions casualties have been reported in Montenegro.

Estimated casualties: N/A

Human impact measure

Casualty data analysis

■ During strikes

A cluster munitions strike on the Golubovci Air Force Base airport near the capital Podgorica on 28 April 1999 caused at least four civilian casualties (one person killed and three injured).³⁷⁴ A 61-year-old woman was killed by a submunition in a village near the airport while running from the strike.³⁷⁵ It is not known which NATO partner dropped the cluster munitions which caused casualties near Golubovci. Both the Netherlands and the UK defense ministries have reported bombing Golubovci airport on that day. The Netherlands specified the use of cluster munitions by two Dutch F-16 airplanes, according to a report citing the Dutch Ministry of Defense website.³⁷⁶ The Netherlands has subsequently noted "the risks of unintended collateral damage" associated with the cluster munitions it used in the NATO bombing campaign.³⁷⁷

■ Post-strike

Post-strike, one boy was killed and three injured in one incident in the village of Besnik.³⁷⁸ The boys had found a RBL-755 submunition while exploring a field which had been bombed the previous night.

Most impacted groups and areas

Villagers in contaminated areas have been most impacted by cluster submunition contamination, particularly forest workers and poor people who supplement their nutrition intake with forest foods.³⁷⁹

The residents of Besnik and Njeguši villages in Rožaje municipality have been most impacted by cluster submunition contamination in Montenegro. This municipality is one of the least economically developed in Montenegro. Timber and firewood resources constitute the basis of income generation for both villages. Metal shrapnel from cluster submunitions imbedded in the wood has prevented some trees from being used, even years after the strike. Some residents avoided collecting food in areas known to be contaminated with cluster submunitions. However, other locals continued to use some areas known to be contaminated for picking berries and collecting mushrooms. While acknowledging the risk and fear the submunitions cause, these people felt forced by economic necessity to use these resources.³⁸⁰

In Golubovci, the strike caused considerable property damage and loss of resources. Cluster munitions damaged all the village's houses, the road and a number of cars. Cluster submunitions caused fires which burned some other buildings in the village as well as hay and orchards. Numerous cattle were killed by exploding cluster munitions.³⁸¹

Impact conclusion

The full extent of cluster munitions impact is under assessment. However, even relatively limited contamination has had a negative effect on the livelihood of rural communities, subsistence farmers, and people supplementing their income with forest produce.

Capacity to respond

Since Montenegro became an independent state in June 2006, it is not known if responsibility for programs aimed at reducing the risks posed by cluster submunitions will be taken up by a specific body. The Regional Center for Underwater Demining has been involved in a recent survey of submunitions-contaminated areas.³⁸²

Based on the general survey around the villages of Besnik and Njeguši, the contaminated area has been marked with trilingual warning signs.³⁸³ Clearance work was scheduled to be carried out in the area during 2007.³⁸⁴ A survey of the suspected hazardous area around Golubovci, Podgorica, is planned for 2007.³⁸⁵ In 2004, a Commission for Antipersonnel Mine Victims was established by the Ministry of Health of Montenegro. However, there does not seem to be progress in the implementation of survivor assistance in Montenegro.³⁸⁶

Recommendations

- Coordinated survivor assistance activities should be implemented.
- Submunitions on contaminated land in the affected regions should be cleared as quickly as possible within a framework of wider economic support and measures for the affected communities.

SERBIA



Key findings

- There are at least 94 casualties due to cluster submunitions, and possibly up to 100 more.
- People in southeastern Serbia have “almost daily encounters” with unexploded submunitions in areas of livelihood activity near villages.
- A survey assessing the full scope of contamination is awaiting release of NATO strike data.

Country indicators³⁸⁷

GDP (purchasing power parity): US\$44.83 billion (2006 est.)

GDP - per capita (PPP): US\$4,400 (2005 est.)

GDP - composition by sector: (2005 est.)

- **agriculture:** 16.6 percent
- **industry:** 25.5 percent
- **services:** 57.9 percent

Labor force - by occupation: 2.961 million³⁸⁸ (2002 est.)

- **agriculture:** 30 percent
- **industry:** 46 percent
- **services:** 24 percent

Unemployment rate: 31.6 percent (2005 est.)³⁸⁹

HDI: 0.797 in 2003 and 0.811 in 2004³⁹⁰

Measures of poverty and development: Sanctions, mismanagement, and infrastructure and industry damage due to NATO air strikes in 1999 have reduced the economy to half its 1990 size. Some 10 percent of the population of Serbia is poor, with large regional differences.³⁹¹ Poverty in Serbia increased considerably in the 1990s, growing by two and a half times, and an increasing number of people live close to the poverty line.³⁹² People with disabilities in particular suffer from high unemployment, social exclusion, and very often have no access to education.³⁹³

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used during aerial bombardments in NATO “Operation Allied Force” from March to June 1999.

Cluster submunitions used: The main cluster submunitions used by NATO forces were RBL-755, BLU-97 and Mk118 (Rockeye). It has also been said that French Beluga submunitions or submunitions of similar design were also used.³⁹⁴

Number of cluster submunitions used: The total number of cluster munitions used during the bombing of Serbia is not known. According to the UK Minister of State for the Armed Forces, 32 RBL-755 cluster munitions, together containing 4,704 submunitions, were dropped on Serbia by the UK during “Operation Allied Force”.³⁹⁵ One estimate is that some 64,000 cluster munitions may have been dropped on Serbia.³⁹⁶

Contamination estimate: Unexploded cluster submunitions and other ERW from the NATO bombing in 1999 were scattered throughout inhabited areas in Serbia.³⁹⁷ Of these, cluster submunitions seemed to cause the greatest problems and constituted the main type of ERW found. In early 2006, six main areas of Serbia remained contaminated with cluster submunitions: Niš, Kraljevo, Kursumlija, Sjenica, Mount Kopaonik and Vladimirci with an estimated contamination of 24 square kilometers.³⁹⁸ In addition, Bujanovac and Preševo municipalities in southeastern Serbia are reported to be seriously contaminated but have not been surveyed, as the area has been under direct control of a separate coordinating body since the Kosovo crisis of 1999.³⁹⁹ There might be unexploded submunitions in several other locations: Ravnište village in Brus municipality, Bumbarevo Brdo and Guncati villages (Knić municipality), Bresnica village (Čačak municipality), Miroslajci village (Lazarevac municipality), Gare village (Gadžin Han municipality), and Vojka and Petrović Salaš villages (Stara Pazova municipality).⁴⁰⁰ Pending a detailed survey based on the anticipated release of cluster munitions strike data by NATO forces, the full extent of contamination remains unclear. In March 2007, parties involved were expecting positive developments.⁴⁰¹ According to the International Trust Fund for Demining and Mine Victims Assistance (ITF), more than 1 million people are believed to be living in contaminated areas in Serbia and Montenegro.⁴⁰²

Failure rate estimate: The failure rates of submunitions in Serbia are not known, but the Serbian Mine Action Center has reported that clearance projects in Kopaonik and Niš identified an average failure rate of up to 20 percent. This failure rate is supported by analysis of clearance data for Niš airport.⁴⁰³ BLU-97 submunitions delivered by the guided AGM-154/A Joint Stand-Off Weapon (JSOW), a modern delivery system designed to be more precise, had a failure rate of at least 15.5 percent in one strike area.⁴⁰⁴ The current overall failure rate estimate for submunitions used in the NATO operation in the province of Kosovo is about eight percent.⁴⁰⁵ However, failure rates as high as 20 percent were also recorded in some areas of Kosovo.⁴⁰⁶ Official failure rates for both BL-755 and BLU-97 are around five percent for BL-755,⁴⁰⁷ including BLU-97s delivered by the AGM-154/A JSOW.⁴⁰⁸

Number of casualties: Cluster submunitions are known to have caused at least 94 casualties in total, 78 of which occurred during strikes and a further 16 of which occurred after strikes due to unexploded submunitions.

Estimated casualties: Cluster munitions seem to have caused well over 100 additional casualties in Serbia during cluster bombing in Niš.⁴⁰⁹ Cluster submunitions incidents causing casualties are known to have occurred in several regions, but were not reported to the authorities.⁴¹⁰

Human impact measure

Casualty data analysis

Confirmed casualties: 1997-2000				
	Total	Strike	Post-strike	Post-conflict
Grand total	94	78	10	6
Injured	66	55	6	5
Killed	28	23	4	1
Unknown status	0	0	0	0
Man	50	45	2	3
Woman	26	26	0	0
Boy	10	4	6	0
Girl	3	3	0	0
Military	N/A	N/A	N/A	N/A
Deminer	3	0	2	1
Unknown	2	0	0	2
Dominant activities	Post-strike: bystanding (three) and clearance (four)			
Dominant location	During strikes : Niš			

There is no reliable casualty data collection system operating in Serbia. The most comprehensive study of cluster submunitions casualties in Serbia was undertaken by Norwegian People's Aid (NPA) and released in early 2007. This study shows that at least 94 people became casualties of cluster submunitions use in Serbia, 78 during strikes and 16 due to the explosion of failed submunitions. Details about two of these casualties are unknown and are not included in the analysis. Most casualties were male (53 men and 10 boys) and 31.5 percent were female (26 women and three girls). Some 30 percent of casualties were killed (28 people) and 64 people were injured. One man was injured during strikes and later killed by an unexploded submunition in a separate incident.

■ Casualties during strikes

Cluster munitions strikes caused civilian casualties in at least 10 cities or towns in Serbia. In total, 78 civilian casualties during strikes were recorded, including 23 people killed and 55 injured. Males constituted 63 percent of casualties (49), including five boys injured. There were 29 female casualties, including three girls killed.

The city of Niš suffered 73 percent of strike casualties (57 casualties in total). Of those, 44 casualties occurred in the city center of Niš on 7 May 1999. On 12 May 1999, 13 more followed in the Duvanište municipality of Niš. In a one-week period, 15 people were killed and at least 42 people were injured in Niš.

NPA lists the names of an additional 29 people injured in Niš on 9 May 1999 and hospital records indicate that a further 30 people received treatment. At least 27 of them were seriously injured. Interviews identified up to 70 more people who have received some sort of first aid without it being recorded at all.⁴¹¹ However, these casualties are not included in the totals as it cannot be confirmed that these casualties are the direct result of the cluster munitions strikes.

Orthopedic surgeons in the main hospital of Niš have reported that the type of injuries caused by cluster submunitions used in the strike on 7 May 1999 were very severe. Cluster submunition fragments caused "wide devastation of soft tissues and bones including neurovascular destruction," resulting in a higher percentage of amputation compared to other weapons injuries.⁴¹² Having a physical disability in Serbia can cause harsh economic disadvantages. Some 70 percent of people with disabilities in Serbia live in poverty.⁴¹³ According to government statistics, only 13 percent of people with disabilities in Serbia "are given the opportunity to work."⁴¹⁴

■ Casualties after strikes

Cluster submunitions caused at least 16 casualties after the NATO bombing in the post-strike (April 1999–May 2000) and the post-conflict (May 2000–2006) periods. Apart from two casualties without detailed records, all casualties were male; five were killed and nine injured. Six of the 10 post-strike casualties were boys.

Most impacted groups and areas

Of casualties occurring due to unexploded cluster submunitions, 36 percent were involved in livelihood activities: two children were herding, one man was working in the garden, another was weeding an orchard, and one person was picking mushrooms. Four child casualties occurred while playing (29 percent). Four casualties also occurred during clearance.

The population of Niš was amongst the most impacted by submunitions in Serbia. In addition to people killed and injured during strikes and subsequent trauma, extensive property damage occurred. Material damaged in Niš included buses, cars, houses and buildings, including three schools which were heavily damaged.⁴¹⁵

■ Socio-economic impact

A number of regions continue to suffer economic consequences resulting from cluster submunitions strikes and subsequent submunitions contamination. Rural areas are the most impacted. Rural areas also suffer the most from poverty in Serbia. At 14.2 percent, the poverty index of the rural population is almost twice as high as the poverty index of the urban population.⁴¹⁶ Southeast Serbia, the region where the city of Niš and the cluster submunitions-contaminated Preševo and Bujanovac municipalities are located, has the highest rate of people in poverty, at 23.5 percent.⁴¹⁷ For example, in the capital Belgrade only 4.2 percent of the population lives in poverty.⁴¹⁸

Reportedly, people in southeastern Serbia have “almost daily encounters” with unexploded submunitions in areas of livelihood activity near villages, including areas that used to be corn fields, woods and pastures.⁴¹⁹ According to the Serbian Mine Action Center, “agricultural use of land and possible economic development sites such as border crossings help determine which locations were prioritized” for clearance.⁴²⁰ The government initially organized clearance teams to remove NATO cluster submunitions in most communities; however, not all areas were cleared and clearance records were not adequately kept.⁴²¹

Nine villages in Bujanovac municipality were affected by cluster munitions strikes. The population of Bogdanovac, one of these affected villages, is mainly reliant on livestock farming, orchard-based horticulture, mushroom-gathering and hunting. However, RBL-755 submunitions contaminate pastures, orchards and woodlands. Economic need pushed some locals to risk entering submunition-contaminated areas to supplement their income through hunting and mushroom collecting. One villager is quoted as saying: “When the weather turns cold, we pray to God, and then enter the woods. We cannot afford to buy wood for heating, and after all, why would we do it when we own four hectares of trees?”⁴²²

Kuršumljija, in southern Serbia, is economically the second least-developed municipality in Serbia. Three square kilometers of agricultural land is affected by unexploded cluster submunitions. Despite the potential hazard, local people continue their agricultural activities out of economic need. Two incidents in which tractor drivers were slightly injured were not reported and the casualties received no medical attention due to their belief that “any action would only complicate their difficult situation.” Submunitions incidents involving livestock have occurred in the village of Merdare in Kuršumljija.⁴²³

Sjenica municipality is in the Sandžak region in southwest Serbia. The economic wellbeing of the majority of the municipality’s population is in some way connected to livestock, including dairy production.⁴²⁴ Since 2003, the UN Food and Agriculture Organization (FAO) has been seeking to revitalize the economic viability of livestock rearing in Sjenica, as the municipality is one of the most “isolated, backward and poorest” areas in the Sandžak region.⁴²⁵ Within this development framework, the former military airport was also returned to civilian authorities. However, some 15 square kilometers of land around the airport remain highly suspected of cluster submunitions contamination and cannot be used. During strikes on the airport on 6 April 1999, several factory buildings surrounding the airport were significantly damaged by submunitions.

In 2007, the mayor of Sjenica said that development in the region had just begun to progress, “[b]ut without this airport, all economic development will be postponed for an indefinite period.”⁴²⁶

The Hotel Bačište in the popular ski area of Mount Kopaonik was completely destroyed by a cluster munitions strike and the surrounding area remains contaminated with unexploded sub-munitions.⁴²⁷

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives			✓
2 Impact on resources		✓	
3 Impact on public sector	✓		
ST SUBTOTAL	1	2	3
T TOTAL			6

Impact conclusion

Cluster munitions caused extensive casualties during strikes, as well as damage to public buildings and infrastructure in some strike areas, including Niš. Some of the poorest areas have been contaminated, often preventing access to land, but in most cases causing fear in communities that cannot afford to abandon the land and natural resources. There is a degree of intentional risk-taking due to economic necessity in poor rural areas with cluster submunitions contamination. Situations in which people feel compelled to risk life and injury for survival are high-cost situations.

Capacity to respond

The Serbian Mine Action Center is responsible for mine action coordination, planning and implementation, including risk education and victim assistance. SMAC aims to clear all cluster submunitions contamination by 2014, funding permitting.⁴²⁸ The US Department of State reports that it expects clearance of all known contaminated areas in Serbia to be completed in 2007.⁴²⁹ Known areas with cluster submunitions contamination are not fully marked, as mountainous terrain prevents some marking. In 2007, Norway launched an initiative for locating and clearing unexploded NATO cluster munitions in Serbia in association with the NATO Partnership for Peace Program. The survey is waiting for NATO strike data to be released.⁴³⁰

Mine/UXO risk education has not been a priority in Serbia and there is no adequate coordination or response. Plans for victim assistance have been developed. However, progress on their implementation has not been reported. Assistance is available but has experienced a decline in resources resulting in a reduction in the quality of services.⁴³¹

Recommendations

- Cluster munitions strike data needs to be released at the first opportunity so adequate survey and clearance can commence.
- Long-term resource and capacity commitment by the international community (including users of cluster munitions in Serbia) for risk education, clearance, and victim assistance within a broader development framework.

Community experience

Slađan Vučković, based on an interview in Niš, 28 June 2006.⁴³²

"I was born in 1966. I lost my hands when I was 33. I attended training in EOD/pyrotechnics for six months. It officially became my profession in 1986... . But it was harder during the war, as we didn't know what we were doing, what we were working on. Here, I prepared my notebook. Maybe I should not keep it, but I kept it as a souvenir. I wanted to write something about it. It is sorted by date, what I have done, which bomb, everything is written in there, what was destroyed, what was done, what was not. I like this job."

Slađan Vučković, notes from clearance 18 April 1999, Merdare, CBU-87/B:

"I found a whole container. I was horrified then... . I was talking to those other people present, explaining [to] them what we should do, and while I did that, I saw a Ford, Priština plates, blue, Ford Escort, old model, parked on the side of the road, all pierced by cluster bomb fragments. One hole next to the other. And there, inside of it, a baby bottle. I think I went blind for a minute, couldn't see anything... . A family must have been in that car... . I left for Niš after that. If the drive from Merdare to Niš had lasted for 15 more minutes I would have jumped out of the car to vomit. I was so disgusted by everything. Those bloody seats... . But the milk bottle... . Horrible, horrible, horrible."

Slađan Vučković, 25 April 1999, accident:

"I remember that day as if it all happened today. It was the last day, we had almost finished... . I had a call from Niš and I was told that we should hurry back, as they were bombed with cluster bombs. I went back to the location to finish up the work, there were some bomblets left on the surface... . I wanted to finish it up as soon as possible, to give my colleagues some hours off before we leave for Niš. I approached it, I knelt down next to it and then...here, you can see how it went: my right leg, left side of the face and both arms. Somehow, it was different than all the others...I was lucky in a way – I fell down on the ground and a rock in front of me took most of the blast. And then I looked – my right arm wasn't there. I don't remember if I checked the left one the same instant. The blood was running like water from a hose. Something was ticking inside my head, but I didn't feel any pain. Interesting, no pain, no pain at all. I was afraid that I would bleed to death, so I put my arms under the armpits and pressed tight. And then I got up and I ran to the people who were standing 200 meters away from the place... . I suppose they did the basic surgery on my arms in Kruševac, they patched them up somehow. The leg was operated in Belgrade. Arms, too. It was probably not done well enough in Kruševac, as they had to fix my injuries urgently. So they operated again. They took off the skin from here. I had 40 stitches on my face. I was never to be described as beautiful, but you can see what it's done to my face."

I am trying to forget now. I am really making [an] effort to forget. I have other interests. My children are growing."



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FOCUS: Commonwealth of Independent States

There has been extensive use of cluster munitions in the Former Soviet Republics, especially in Chechnya, but also in Tajikistan. Cluster munitions use and subsequent casualties have been recorded for the first time in Nagorno-Karabakh. Cluster submunitions casualties seem to constitute a significant portion of total ERW casualties. Cluster submunitions contamination, though largely unknown, appears to be extensive and is blocking resources and development. Especially in the high-use location of Chechnya, where civilian targets were often deliberately hit, there is vast underreporting.

CHECHNYA/RUSSIAN FEDERATION



Area indicators⁴³³

Measures of poverty and development: Chechnya's economy has been devastated by years of conflict and about half the population is internally displaced. Poverty and unemployment levels there are high. The Chechen Department of Labor rates unemployment in Chechnya at 80 percent and poverty levels in the region are much higher than the Russian average.⁴³⁴

Disability spending: N/A

Cluster munitions: area summary

Use period: Cluster munitions have been used extensively by Russian Federation forces in Chechnya, both during the 1994-1996 war and during the recurrence of hostilities in September 1999. Civilian targets, such as public markets, were struck on several occasions. Chechen use has also been alleged.⁴³⁵

Cluster submunitions used: Most of the cluster submunitions in the Russian arsenal have been deployed in Chechnya. Aerial-delivered submunitions include: AO-2.5 RT(M), AO-2.5 KO, AO-1Sch, PTAB-1 M, PTAB-2.5 M, and ShOAB-0.5.⁴³⁶ Cluster munitions fired from Multiple Launch Rocket Systems (MLRS)⁴³⁷ and "impact-fused high explosive fragmentation submunitions[s] carried by the SS-21 tactical missile (Tochka-U) have also been identified."⁴³⁸

Number of cluster submunitions used: N/A

Key findings

- Cluster munitions were used extensively by Russian Federation forces in highly populated areas.
- The total number of cluster submunitions casualties in Chechnya is not known, but there are at least 636 reported casualties.
- Cluster submunitions contribute to war devastation and delay reconstruction.

Contamination estimate: Specific information regarding the full extent of submunitions contamination is not available, as "...no comprehensive surveys have been done to document unexploded cluster munitions..."⁴³⁹ and Chechnya has been "too closed to outside scrutiny" for an adequate evaluation to be done.⁴⁴⁰ However, HALO Trust deminers encountered unexploded submunitions in Chechnya between 1997 and 1999.⁴⁴¹ Chechen authorities estimated that about 6,000 hectares of land were a threat to the population due to mine/ERW contamination.⁴⁴²

Failure rate estimate: The failure rates of Soviet and Russian-manufactured submunitions are not known.

Number of recorded casualties: The total number of cluster submunitions casualties in Chechnya is not known, but there are at least 636 reported casualties. There have been numerous media reports of significant civilian casualties due to use in populated areas.⁴⁴³

Estimated casualties: There could be at least 1,000 casualties from strikes alone based on reports of the numbers of injured not already included in casualty tallies.

Human impact measure

Casualty data analysis

Confirmed casualties: 1994–2007				
	Total	Strike	Post-strike	Post-conflict
Grand total	636	612	24	N/A
Injured	335	318	17	N/A
Killed	301	294	7	N/A
Unknown status	0	0	0	N/A
Man	2	N/A	2	N/A
Woman	29	29	0	N/A
Boy	39	24	15	N/A
Girl	1	1	0	N/A
Military	4	4	0	N/A
Deminer	N/A	N/A	N/A	N/A
Unknown	561	554	7	
Dominant activities				
Dominant location	Market area			

The total number of submunitions casualties in Chechnya is not known. However, at least 301 killed and 335 injured casualties were identified, of which at least 39 were children.

Only one incident of a failed submunition causing casualties was identified. At least 24 casualties were reported, 15 of which were children (seven people killed and 17 injured).

The episodic armed conflict and the overall volatile security situation have limited the collection of comprehensive data.⁴⁴⁴ UNICEF, which manages casualty data collected since October 2000 for casualties since 1994, does not differentiate cluster submunitions casualties from other ERW casualties.⁴⁴⁵

Most impacted groups and areas

■ People during strikes

Almost all (612 of the known 636) casualties occurred during strikes and were reported in media articles or through testimony to humanitarian organizations. It must be assumed that many casualties were not reported due to restricted press and relief agency access and subsequent limited reporting from the region.⁴⁴⁶

Cluster submunitions were reported to have caused 283 casualties during strikes in the 1994–1996 war (96 people killed and 187 injured). The only recorded military cluster submunition casualty occurred during a strike in 1994. Cluster munitions strikes in the second conflict, since 1999, have caused 329 casualties, of which at least 198 people were killed and at least 131 injured.

The worst recorded case of a cluster munitions strike causing civilian casualties occurred on 21 October 1999 in the capital Grozny. At least 137 people were killed. Up to 400 more people were injured, but this estimate is not included in the table and verified casualties above. Evidence indicates that the lists of those killed were incomplete, as relatives took many bodies away from the crowded hospitals for burial.⁴⁴⁷ The majority of casualties occurred in the city's central market.⁴⁴⁸ A mosque and a maternity ward were also hit during the strikes, later resulting in at least 13 women and 15 child casualties.⁴⁴⁹

Security analysts have asserted that the missiles fired at Grozny on that day were the SS-21 type.⁴⁵⁰ HALO Trust attributed the casualties "to an 'airburst device' from a SS-21 missile."⁴⁵¹ A leading human rights organization in Russia collected evidence at the strike scene and concluded that remnants and fragmentation were consistent with cluster munitions use. They noted that the lesser damage to buildings in comparison to the large number of human casualties is typical of cluster submunitions.⁴⁵² As recent as 2005, humanitarian organizations expressed an interest in pursuing legal action on humanitarian grounds regarding the cluster submunitions use.⁴⁵³

■ Children

Due to the limited information about post-strike and post-conflict casualties, analysis of the human impact of cluster munitions is limited. However, it has been observed that compared to adults, children in Chechnya are generally more likely to be injured by unexploded ordnance than by mines. As a result, children have sustained more upper body injuries and undergone more upper limb amputations than adults. Most casualties occurring during playing or tampering with a device were caused by unexploded ordnance, which was attributed to the UXO being more visible than landmines in general.⁴⁵⁴ The method of recording "tampering" and "playing" often masks the general activity the casualty was undertaking when the ordnance was encountered (such as tending animals). This means socio-economic information about activities which bring children into contact with hazardous areas is lacking.⁴⁵⁵

Between 1994 and 2005, ERW caused 29.5 percent of 3,021 recorded casualties (892 casualties - 255 children and 637 adults). In comparison, antipersonnel mines accounted for 33.2 percent of casualties (1,004 casualties - 223 children and 781 adults); antitank mines 7.4 percent (223 casualties - 34 children and 189 adults); booby traps 7.1 percent (214 casualties - 65 children and 149 adults) and unknown devices 22.8 percent (688 casualties - 493 children and 195 adults).⁴⁵⁶

Impact conclusion

The human impact of cluster munitions use is likely to be high in Chechnya as primarily civilian locations were targeted and no complete reporting and casualty monitoring system exists. In addition, unexploded cluster submunitions are likely to continue to cause casualties as there is no large-scale clearance.

Capacity to respond

There is no existing mine action authority for Chechnya and surrounding regions. Mine and ERW clearance remains the responsibility of governmental bodies. Although no large-scale clearance operations have been conducted in Chechnya, some organizations have been involved in small-scale clearance projects.⁴⁵⁷ UNICEF acts as the coordination focal point for victim assistance and risk education activities in the North Caucasus.⁴⁵⁸ Risk education is provided by local NGOs in cooperation with international organizations. War has devastated surgical and general health facilities in Chechnya. Some 16 humanitarian organizations, including NGOs and international agencies, work to build health infrastructure capacity in Chechnya and the region. The security situation continues to limit the provision of assistance.⁴⁵⁹

Recommendations

- Create circumstances that allow survey, hazardous area marking and clearance to establish a mine action plan with priority clearance tasks.
- Expand existing casualty data collection mechanisms.
- International commitment to reconstruction efforts is needed.

Community experience

Leila Migieva, 46, lost her left hand and leg when the bus she was traveling in was hit by shrapnel from a cluster munitions strike. The bus was passing Groznyy central market, Chechnya, on 21 October 1999. She was on her way home after buying groceries at the market. She told an Amnesty International representative: "Many people died. Children among them. It was mostly women, children and old people, because these are the people mainly left in the town. The fighters never suffer; it's always the peaceful civilians. So many people died and so many people were like me; I am just a drop in the ocean. But even without a leg and a hand, I survived. Many didn't."⁴⁶⁰

Community experience

At 5 pm on 21 October, the day of the cluster munitions strike on Groznyy central market, Luiza Asukhanova was walking home with her daughter, Sulikhan, after selling fruit and vegetables at the market. There were two explosions. Sulikhan started running, when there was a third explosion. Sulikhan fell down and a bone in her arm was broken and sticking out. Mother and daughter abandoned their bags and started running again while Sulikhan's arm was hanging off her body. They found a car to take them to the hospital, where already many people were treated already. When it got dark, they used candles for light. Sulikhan was given a painkiller and they were told to go to another hospital as the first hospital would not have time to treat her. They went to Hospital No. 9, but the situation was the same, and from there, to Hospital No. 4, where Sulikhan was given a painkiller every 30 minutes. At around 10 pm her arm was amputated.⁴⁶¹

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NAGORNO-KARABAKH/AZERBAIJAN⁴⁶²



Key findings

- At least 13 casualties due to cluster submunitions have been confirmed in Nagorno-Karabakh.
- Cluster submunitions contamination has been identified in at least 162 locations.

Area indicators⁴⁶³

GDP: N/A

Measures of poverty and development: Unresolved issues from the Nagorno-Karabakh conflict keep tension high in the region and impose major economic costs throughout the area and in the countries involved. Many people fled their homes due to the conflict. Since the signing of a ceasefire agreement in 1994, some 690,000 people from the area of Nagorno-Karabakh remain displaced in Azerbaijan. An estimated 30,000 mainly ethnic Armenian displaced persons arrived in Nagorno-Karabakh from neighboring regions of Azerbaijan.⁴⁶⁴

Disability spending: N/A

Cluster munitions: area summary

Use period: Cluster munitions were used between 1992 and 1994 during a regional conflict involving Azerbaijan, Armenia and ethnic Armenian secessionists in Nagorno-Karabakh. It has been reported that in 1992, the armed forces of Azerbaijan dropped cluster munitions on civilian targets in towns and villages in Nagorno-Karabakh.⁴⁶⁵

Cluster submunitions used: In 2007, HALO Trust (HALO) reported clearing 3,540 PTAB-1, 3,041 ShOAB-0.5, and an unknown number of AO-2.5 submunitions.⁴⁶⁶

Number of cluster submunitions used: N/A

Contamination estimate: As of 3 April 2007, HALO survey results indicated that 162 areas containing submunitions have yet to be cleared. HALO estimates an additional 150 areas will be identified as the survey continues.⁴⁶⁷

Failure rate estimate: The failure rate of Soviet-manufactured submunitions is unknown.

Number of casualties: As of April 2007, 13 casualties had been recorded.

Estimated casualties: N/A

Human impact measure

*Casualty data analysis*⁴⁶⁸

As of 3 April 2007, HALO has recorded 13 casualties caused by cluster submunitions in the region of Nagorno-Karabakh (five killed and eight injured). The casualties occurred in 10 separate incidents. Among the casualties were eight children (seven boys and one girl) and five adult men. HALO has recorded casualties from PTAB submunitions and ShOAB submunitions but none from AO-2.5 submunitions.⁴⁶⁹

Three casualties from unexploded cluster submunitions occurred prior to 1999 and 10 were recorded between 1999 and 2007. Casualties during strikes were not recorded, and it is likely more cluster submunitions casualties will be recorded as the HALO survey of Nagorno-Karabakh advances.

Cluster submunitions incidents occurred in forests, fields and residential areas. Activities leading to incidents with adult casualties are farming or wood gathering. Children mostly were injured or killed while playing with submunitions.

HALO has identified 290 mine/ERW casualties since December 1995. Of these, 97 were caused by ERW (including submunitions), 93 were caused by antipersonnel mines and 100 were caused by antivehicle mines. Children make up a quarter (74 casualties) of the total casualties; eight were girls and 66 were boys. The majority of mine/ERW casualties were men (202) and six casualties were women. The age of eight male casualties is unknown.

Most impacted groups and areas

Although children make up less than a third of all total landmine/UXO casualties, they are the majority of casualties caused by submunitions. Only one child casualty was a girl. Three child casualties occurred while playing, three occurred during shepherding, and two while farming.

Mines and ERW severely limit access to land for agriculture. HALO states that "movements in the front lines resulted in minefields and significant quantities of UXO being left in peaceful areas needed for agriculture. In many areas access to prime land is denied and the steady stream of casualties indicates the requirement for widespread mine clearance ahead of cultivation."⁴⁷⁰

Impact conclusion

This is the first time cluster submunitions casualties have been confirmed in Nagorno-Karabakh. Even though the extent of the human impact is largely unknown, there could be significant contamination, leading to subsequent hazards for people.

Capacity to respond

Officially, the Mine Action Coordination Committee in Nagorno-Karabakh is responsible for coordination of mine action and information-sharing. HALO has set up a mine action center implementing survey, clearance, MRE and information dissemination to stakeholders. MRE includes community liaison integrated into clearance activity, as well as formal school and adult briefing sessions. Victim assistance is limited and hampered by the lack of resources and skilled staff, as well as the economic situation. The International Committee of the Red Cross supports physical rehabilitation and noted that there is a need for assistance projects dealing with other aspects of rehabilitation and reintegration.⁴⁷¹

Recommendation

- Continue further risk assessment and adapt casualty data collection accordingly.

TAJIKISTAN



Key findings

- Cluster submunitions casualties were 58.5 percent of all recorded ERW casualties.
- All but three cluster submunitions casualties occurred in the Rasht district, where they accounted for 94 percent of recorded mine/ERW casualties. Three casualties were reported in Panj district in 2007. Two children were injured and one killed. The incident is still under investigation.

Country indicators⁴⁷²

GDP (purchasing power parity): US\$9.405 billion (2006 est.)

GDP - per capita (PPP): US\$1,300 (2006 est.)

GDP - composition by sector: (2006 est.)

- *agriculture:* 22.7 percent
- *industry:* 28.5 percent
- *services:* 48.8 percent

Labor force - by occupation: 3.7 million (2003 est.)

- *agriculture:* 67.2 percent
- *industry:* 7.5 percent
- *services:* 25.3 percent (2000 est.)

Unemployment rate: 12 percent (2004 est.)

HDI: 0.652, Tajikistan is ranked 122nd out of 177 countries in the low human development group.⁴⁷³

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 39.3. Tajikistan is ranked 73rd out of 102 developing countries.⁴⁷⁴

Tajikistan has one of the lowest GDP per capita in the region and very little arable land. Approximately 64 percent of the population lives below the poverty line.

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used in Tajikistan by government forces supported by other countries during the civil war from 1992-1997, especially during a 10-day period in 1993.⁴⁷⁵

Cluster submunitions used: The Soviet-manufactured RBK series (250, 275, and 500) and KMG-U cluster munitions were used in Tajikistan, and three cluster submunitions types were identified: AO-2.5 (RTM), AO-1Sch and ShoAB-0.5.

Number of cluster submunitions used: N/A

Contamination estimate: The Tajik Mine Action Cell (TMAC) reported that it has cleared AO-2.5 (611) and ShoAB-0.5 (25) cluster submunitions from the Rasht and Tavildara districts in the Rasht Valley.⁴⁷⁶ Estimates of the extent of contamination are not available. However, it was noted that the targets were hilltop defenses and perhaps the towns. Many cluster munitions fell on the towns; for example, they were found in Gharm town in the Rasht Valley.⁴⁷⁷

Failure rate estimate: The failure rate of the Soviet-manufactured cluster submunitions is not known. However, the defending forces fired at the attacking planes, which may explain why many cluster bombs seem to have been released at the wrong altitude, as some complete cluster munitions landed intact on the snowy soil. Each year in spring, unexploded cluster submunitions roll down the hilltops with the snowmelt and spring rains.⁴⁷⁸

Number of casualties: Complete casualty data is not available. In April 2007, TMAC reported a total of 51 submunitions casualties in the Rasht Valley, with 31 killed and 20 injured.

Estimated casualties: While no estimates are possible, available data suggests there are more cluster submunitions casualties in Tajikistan, particularly in districts with known contamination.

Human impact measure

*Casualty data analysis*⁴⁷⁹

The total number of submunitions casualties in Tajikistan remains unknown. Data collection is conducted by TMAC through the Red Cross Society of Tajikistan and is considered incomplete.⁴⁸⁰ Information specifically regarding strike and post-strike casualties was not available.

TMAC reported 51 confirmed cluster submunitions casualties, 31 killed and 20 injured, as of April 2007. All reported submunitions casualties were caused by AO-2.5 and ShOAB-0.5 cluster submunitions and all occurred in the Rasht Valley (three in Panj and 48 in Rasht district).⁴⁸¹ The Rasht Valley suffered the most landmine/ERW casualties in the entire country, with Rasht and Tavildara districts combined at 32 percent (186) of all mine/ERW casualties recorded (582) in IMSMA by TMAC. This number is likely to be significantly less than the real figure, as many deaths may not have been reported. Additional casualties were reportedly also recorded in the Panj region.⁴⁸²

In the Rasht Valley, the prevalent ordnance type found is cluster submunitions, so it is inferred that most ERW casualties were as a result of these. There are unconfirmed stories of several other deaths in the mountains, and other stories of shepherds hurling dozens of cluster submunitions into ravines. Many cluster submunitions were found in gardens – mostly collected into one spot and buried by the inhabitants who were able to identify the submunitions types from photographs.⁴⁸³

Cluster submunitions casualties accounted for 59 percent of all ERW casualties reported by TMAC. The mortality rate for submunitions casualties in Tajikistan is 62.5 percent and is likely due to incidents occurring in remote locations where emergency transport is not available. Although details regarding all submunitions incidents are not available, Landmine Monitor reported in 2006 that three children were injured while playing with an ERW and that 20 percent of all mine/ERW casualties are children.⁴⁸⁴ Children have been collecting submunitions from their play areas at the bottom of the hills.⁴⁸⁵

Most impacted groups and areas

Males are the most vulnerable population in Tajikistan, accounting for 71 percent (34) of 48 total casualties. Men were 38 percent (18) of total casualties and boys 33 percent (16). While the percentage of boys is consistent with the rates in many other countries, the rate for men was quite low and that for females much higher, at 27 percent (13).

Women accounted for 17 percent (eight) and girls 10 percent (five) of cluster submunitions casualties. This suggests females are engaging in livelihood activities traditionally carried out by men (shepherding, farming and collecting wood/food).⁴⁸⁶ After the civil war, the Rasht Valley lost much of its male work force (50 percent) to work abroad, leaving women and children behind to care for the subsistence farming and husbandry tasks.⁴⁸⁷ However, details on the activities and location types where the incidents occurred were not available.

Clearance activities: TMAC reported that in total, 636 cluster submunitions had been located and destroyed in Rasht and Tavildara; 96 percent (611) were AO-2.5 and four percent (25) ShOAB-0.5. An unrecorded number of AO-1Sch and AO-2.5 RT(M) submunitions were also identified in these two districts during survey activities.⁴⁸⁸ Notably, the two districts combined for 71 percent (87) of all unknown device casualties identified in the Landmine Impact Survey (122). Rasht accounted for 45 percent of these incidents and Tavildara for 26. Considering that 100 percent of casualties in Rasht district were caused by cluster submunitions, it is likely that at least some of these casualties were also caused by cluster submunitions.

Arable land is estimated at 6.2 percent for the entire country.⁴⁸⁹ In Rasht, only 12 percent of land is arable and although there is greater access to rented farmland (18 percent), most farmland available is not irrigated and dependent on rainfall. Since 2001, access to land has declined and incomes remain volatile.⁴⁹⁰ Many of these arable areas were used for defensive positions because they were high-altitude flat areas; they were subsequently bombed with cluster munitions. Economic growth resulting from agricultural and rural development could contribute to higher per capita income, which currently stands at about US\$330 per year.

TMAC has decided that up-to-date and relevant MRE should start in the local schools and that a Battle Area Clearance (BAC) survey is necessary in the Rasht Valley.⁴⁹¹

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives	✓		
2 Impact on resources	✓		
3 Impact on public sector	✓		
ST SUBTOTAL	3		
T TOTAL			3

Impact conclusion

Mine/ERW casualties, including cluster submunitions casualties, are underreported in Tajikistan, especially in remote areas such as the Rasht Valley. The population of this region is vulnerable to landmine/ERW contamination considering the limited access to arable land, low employment, a volatile economy, and the high incidence of women-headed households. Injury or death due to cluster submunitions would have a significant impact on the family economy.

Capacity to respond

Programs aimed at reducing the risk from cluster submunitions are part of Tajikistan's mine action capacity, which is coordinated by the Commission on the Implementation of International Humanitarian Law. UNDP, UNICEF and the ICRC provide technical support. Mine clearance/EOD is coordinated by the TMAC. MRE, including ERW but not specific to cluster submunitions, is conducted primarily by the Red Crescent Society of Tajikistan. Victim assistance for landmine and ERW survivors is a sub-strategy of the TMAC Mine Action Strategy and Tajikistan has an extensive healthcare network, but lacks appropriate emergency care in remote rural areas where incidents occur. Physical rehabilitation exists and is supported by the ICRC. Additional needs for comprehensive care of mine/ERW survivors have been recognized and are being addressed.⁴⁹²

Recommendations

- Details of the activities, locations, marital status, and other relevant information for MRE and victim assistance to landmine/ERW casualties generally should be included in data collection activities.
- Cluster submunitions contamination outside of known or suspected mined areas should be identified, marked and cleared.

FOCUS: Greater Middle East and North Africa region

The greater Middle East region has seen some of the most extensive use of cluster munitions – in Iraq – as well as the most recent use of these weapons in Lebanon and Israel. Several countries have faced several periods of cluster munitions use and hampered clearance due to the security situation. Often, cluster submunitions contamination comes in addition to existing mine/ERW problems, thus exacerbating contamination and casualty rates. A substantial proportion of cluster munitions is either in or near human habitation, subsequently hampering access to agriculture and pasture land and slowing down reconstruction efforts.

AFGHANISTAN



Key findings

- Boys between five and 14 tending animals are most likely to become cluster munitions casualties.
- In the immediate aftermath of the 2001–2002 strikes, cluster munitions casualties constituted 10 percent of casualties.
- An estimate indicates that there are between 2,814 and 4,132 cluster submunitions casualties in Afghanistan.⁴⁹³

Country indicators⁴⁹⁴

GDP (purchasing power parity): US\$21.5 billion (2006 est.)

GDP - per capita (PPP): US\$800 (2006 est.)

GDP - composition by sector: (2005 est., excluding opium production, generating US\$3 billion per year)

- *agriculture:* 38 percent
- *industry:* 24 percent
- *services:* 38 percent

Labor force - by occupation: 15 million (2003 est.)

- *agriculture:* 80 percent
- *industry:* 10 percent
- *services:* 10 percent (2004 est.)

Unemployment rate: 40 percent (2005 est.)

HDI: 173rd⁴⁹⁵

Measures of poverty and development: Afghanistan is an extremely poor country devastated by decades of conflict. Approximately 53 percent of Afghans live under the poverty line and 38.5 percent of people are expected not to live beyond 40. Afghanistan is highly dependent on foreign aid, which will continue to be needed in the mid- to long-term to raise its living standard from being one of the lowest in the world.

Disability spending: Formerly, the Afghan government had a Ministry of Martyrs and Disabled, which was then absorbed into the Ministry of Labor, Social Affairs, Martyrs and Disabled.

Cluster munitions: country summary

Use period: Cluster munitions were used by the Soviet Union, the Taliban, the Northern Alliance and the United States between 1980 and 2002. Some media reported cluster munitions use in 2006.⁴⁹⁶ However, clearance operators indicate that these allegations were not correct, at the same time noting that the conflict areas are no-go zones for humanitarian demining.⁴⁹⁷

Cluster submunitions used: The most commonly used types of Soviet submunitions were AO1Sch and AO-2.5RTM antipersonnel submunitions, OFAB-50UD; OAB-2.5RT, BetAB, or improved BetAB-M, PTAB 2.5 and PTAB-1M. The Taliban and Northern Alliance mainly used surface-delivered cluster munitions. The US mostly used air-delivered BLU-97 submunitions. Reportedly, Yugoslavian KB-1 submunitions were also found in Marawara district, Kunar province.⁴⁹⁸ An extensive list of submunitions used in Afghanistan can be found in the Afghanistan Ordnance Identification Guide in support of the US Department of Defense humanitarian mine action program.⁴⁹⁹

Number of cluster submunitions used: The total number of cluster submunitions used is unknown. However, the US dropped approximately 1,228 cluster munitions, containing 248,056 submunitions in 232 strikes.⁵⁰⁰ The UN Mine Action Centre for Afghanistan has recorded almost 40 additional strike areas.⁵⁰¹

Contamination estimate: The remaining contamination due to unexploded Soviet cluster munitions is not known. As of February 2007, 222 of 269 identified cluster munitions strike sites have been cleared of recent US contamination.⁵⁰² Soviet contamination is not mapped and often mixed with mine/other ERW contamination.⁵⁰³ Due to US bunker bombings, Soviet submunitions resurfaced in certain locations. Danish Demining Group, for example, still clears Soviet submunitions in Herat, Kapisa and Mazar-i-Sharif. It cleared 18,877 Soviet submunitions in 2002 (especially from cluster munitions types RBK-250 and RBK-500), but the number had declined to 604 in 2006.⁵⁰⁴ In several southern and central regions, clearance cannot take place for security reasons. However, mines, abandoned explosive ordnance (AXO) and unexploded ordnance (UXO) pose great risks, as 715 square kilometers of mine/ERW-contaminated land directly affect 4 million people.⁵⁰⁵

Failure rate estimate: The official failure rate of the BLU-97 is seven percent, but failure rates of at least 16 percent have been observed in Afghanistan. The failure rate of the Soviet submunitions is not known. However, their fuses would be less sensitive, making it more difficult to unintentionally detonate a failed submunition.

Number of recorded casualties: At least 733 cluster submunitions casualties were recorded as of the end of 2006. However, Soviet-era records are incomplete and it would appear casualties during strikes were not recorded.

Estimated casualties: Based on the results of the National Disability Survey in Afghanistan, there could be between 2,814 and 4,132 cluster submunitions casualties in Afghanistan.⁵⁰⁶ Casualty records are underreported, as casualties who die before reaching medical assistance were not always recorded, especially in earlier years. ICRC's community-based data collection, begun in only 36 medical centers in 1998, started to reach all mine-affected provinces in 2002; by 2004 it included nearly 400 centers.⁵⁰⁷ It is estimated that there were approximately 600-720 mine/ERW casualties per month in 1993, 300-360 per month in 1997, at least 150 per month in 2000, approximately 100 per month since 2004, and 60 per month in 2006.⁵⁰⁸

Human impact measure⁵⁰⁹

Casualty data analysis

Confirmed casualties: 1980–December 2006				
	Total	Strike	Post-strike	Post-conflict
Grand total	733	26	287	420
Injured	557	2	220	335
Killed	175	24	67	84
Unknown status	1	0	0	1
Man	322	13	121	188
Woman	50	1	20	29
Boy	232	4	106	122
Girl	34	1	9	24
Military	79	0	31	48
Deminer	9	0	0	9
Unknown	7	7	0	0
Dominant activities	Tending animals (149), farming (135)			
Dominant location	Herat (122)			

There are at least 733 casualties due to cluster submunitions in Afghanistan. ICRC recorded 707 casualties due to cluster submunitions occurring between 1980 and 31 December 2006. In addition, Human Rights Watch (HRW) collected testimonies of casualties, of which 26 casualties during strikes had not been included in the ICRC files. As of January 2007, ICRC casualty data collection has been merged with that of the UNMACA and it is not known if there were cluster submunitions casualties in 2007. Of the 733 casualties, 175 were killed and 557 were injured. Men were the largest group at 43.9 percent, followed by boys at 31.7 percent.

In total, there were 16,471 casualty files available for analysis: antipersonnel mines constitute nearly half of all casualties (49.9 percent or 8,212 records). The casualty ratio for antipersonnel mines has fallen over time from 65.1 percent of casualties to 44.5 percent. Casualties due to explosive remnants of war (ERW) are the second largest group at 32.8 percent (5,409); cluster submunitions casualties make up 4.4 percent. However, the ERW casualty ratio increased exponentially from 18.6 percent prior to 1998 to 37.8 percent for the period 1998–2006. Comparatively, the cluster submunitions casualty ratio decreased from 5.6 percent of total casualties prior to 1998, to three percent in 1998–2006. In the period since the US strikes, ERW casualties constitute 51.6 percent of total casualties and antipersonnel mines caused 34.1 percent of casualties.

Many people sustained multiple body injuries (278) and 49 people (partially) lost their eyesight. At least 274 people needed an amputation, often multiple limbs.

Casualty data is incomplete; underreporting is especially significant for Soviet use periods. Casualties during strikes for all use periods are lacking. Soviet troops used cluster munitions mostly as antipersonnel weapons in their targeting of "Mujahiddeen strong points and groups of fighters identified in the open."⁵¹⁰ Herat province, one of the main Soviet battlegrounds, is also one of the provinces with the highest disability prevalence.⁵¹¹ The 2001–2002 strike casualties HRW recorded were all civilian and occurred mostly in or near houses or shops (24).

Most impacted groups

In 1999, the Socio-economic Impact Study (SEIS) indicated that approximately 50 percent of mine/ERW casualties were responsible for supporting their families and that most casualties belong to economically active age groups.⁵¹²

■ People post-strike

From the start of the US cluster munitions strikes on 7 October 2001 to the end of the post-strike emergency period (17 March 2003), cluster munitions casualties constitute 9.3 percent of casualties. This percentage is twice as high as the overall total and three times as high as the average percentage for 1998–2006. This period also marks the first time ever that there were more ERW casualties (1,039) than antipersonnel mine casualties (852).

The increase in ERW casualties (where the device type is mostly not known) can be linked to increased scrap metal collection of, for example, cluster bomb unit (CBU) casings. The casings are not dangerous, but the area they are lying in might be contaminated with mines/ERW. In 2002, collection of materials including metal scrap and tampering accounted for 18 percent of mine/ERW casualties; in 2003, tampering and handling caused 23 percent of casualties.⁵¹³

Most people were injured or killed while carrying out livelihood activities: tending animals (63), farming (56) and collecting wood/water/food (22). Tampering is ranked fourth and 12 of 15 tampering casualties occurred in the 2001–2003 post-strike period.

About 40 percent of casualties are children; all but nine were boys under 18. Of the 19 casualties occurring during playing/recreation, 18 were children. Most boys get injured while tending animals, a task traditionally reserved for them.

■ Refugees and returnees

Most post-strike casualties occurred in Nangarhar (64) and in Herat (54). Herat province is still contaminated with Soviet submunitions and Herat city (in Injil district) was the city most struck during the US offensive. Injil district, excluding Herat city, is the area with the second most casualties, mainly due to agriculture being the main activity of the district. The 2005 Landmine Impact Survey (LIS) found that the most mine/ERW impacted communities with the most recent casualties between 2002 and 2004 were in the Injil and Shindad districts.⁵¹⁴

While Nangarhar ranks only second in terms of total casualties, it ranks first in post-strike casualties, which could be due to its location bordering Pakistan and to the number of strikes. Most casualties occurred in the Pachir Wa Agam area, known for its permeable border with Pakistan. It is likely that returning refugees were unaware of the dangers of unexploded cluster submunitions. The second highest group of casualties in Nangarhar province occurred in and around its capital, Jalalabad, one of the most targeted areas.

Previously, the peak years for mine/ERW incidents in Afghanistan also appear to have corresponded with large-scale refugee return, such as in 1988 at the beginning of Soviet troop withdrawal, as well as with the 1992-1994 repatriation.⁵¹⁵

In the longer term, unexploded cluster munitions, just like mines and other ERW, impede the return of approximately several million refugees and internally displaced persons (IDPs). However, refugees started returning faster than expected immediately after the fall of the Taliban. By the end of 2002, approximately 2 million refugees had returned, mainly to Kabul and Nangarhar province.⁵¹⁶

Unexploded cluster submunitions endanger IDPs moving through contaminated provinces who are unaware of the risk areas. In addition, cluster submunitions prolong or exacerbate internal displacement, as certain villages continue to be perceived as too dangerous to live in.⁵¹⁷ Unexploded cluster submunitions also cause problems for people moving into previously military areas; for example, this has been a problem in Herat.

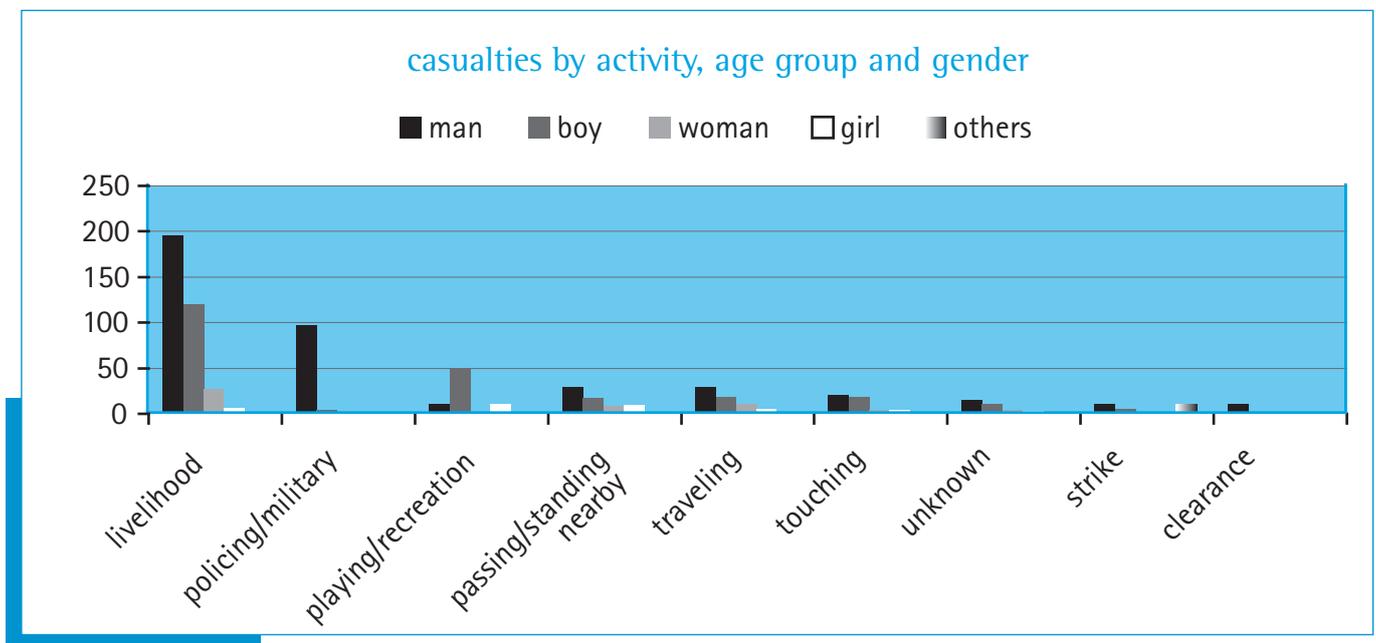
Post-conflict cluster submunitions casualty rates stayed relatively constant for both major use periods. The continuing return of refugees and IDPs could contribute to the relatively consistent level of post-conflict casualties. The post-conflict average for nearly 12 years after the Soviet invasion was 27 casualties per year. However, there was a slight increase in the annual average to nearly 29 casualties in the period after the US offensive.

■ People carrying out livelihood activities

Approximately 70 percent of Afghans work in agriculture. The main exports were fresh and dried fruits, citrus fruits, and oilseeds, which constituted 30 percent of revenue from exports. Agricultural production has decreased considerably due to 22 years of conflict and drought; as a result, 85 percent of the agricultural output comes from five percent of the land.⁵¹⁸

According to the 2005 Landmine Impact Survey (LIS), mines and ERW mainly affect small rural communities, which make up 96 percent of the impacted communities. "Many of these rural communities lie in areas of intense military operations between the invasion of the Soviet army, in late 1979, and the fall of the Taliban regime, in 2001."⁵¹⁹

After cluster munitions strikes, people most often become cluster submunitions casualties while carrying out livelihood activities: tending animals (149 casualties - 21 percent), farming (135 casualties - 19 percent) collecting wood/food/hunting (57 casualties - eight percent). During strikes, six casualties were carrying out livelihood activities, including shop keeping. Tampering caused 42 casualties (six percent).



Shepherds and people collecting wood for fuel or food to supplement their subsistence are also vulnerable to cluster submunitions. The LIS noted that communities found that the most important economic blockage caused by mines/ERW was to pasture land, which was reported in 71 percent of the impacted communities. Approximately 81 percent of pasture land was blocked by suspected hazard areas (SHA). Farmland was the second-most commonly reported blockage, at 47 percent. Access to 56 percent of farmland is blocked by SHA. Most mine/ERW casualties were herders (32 percent) and farmers (26 percent).⁵²⁰

Unemployment among all survivors has increased by 38 percent, but unemployment ratios increased the most for farmers, herders, and military personnel, as these occupations require mobility over difficult terrain. Eight percent of people were working in farming after the incident; nine percent of herders were working after the incident.⁵²¹

All cluster submunitions casualties who had received MRE and knew they were engaging in risk-taking behavior did so out of economic necessity. For land-pressure reasons, people also removed failed cluster submunitions themselves, which is a very dangerous task when dealing with submunitions as unstable as BLU-97s.⁵²²

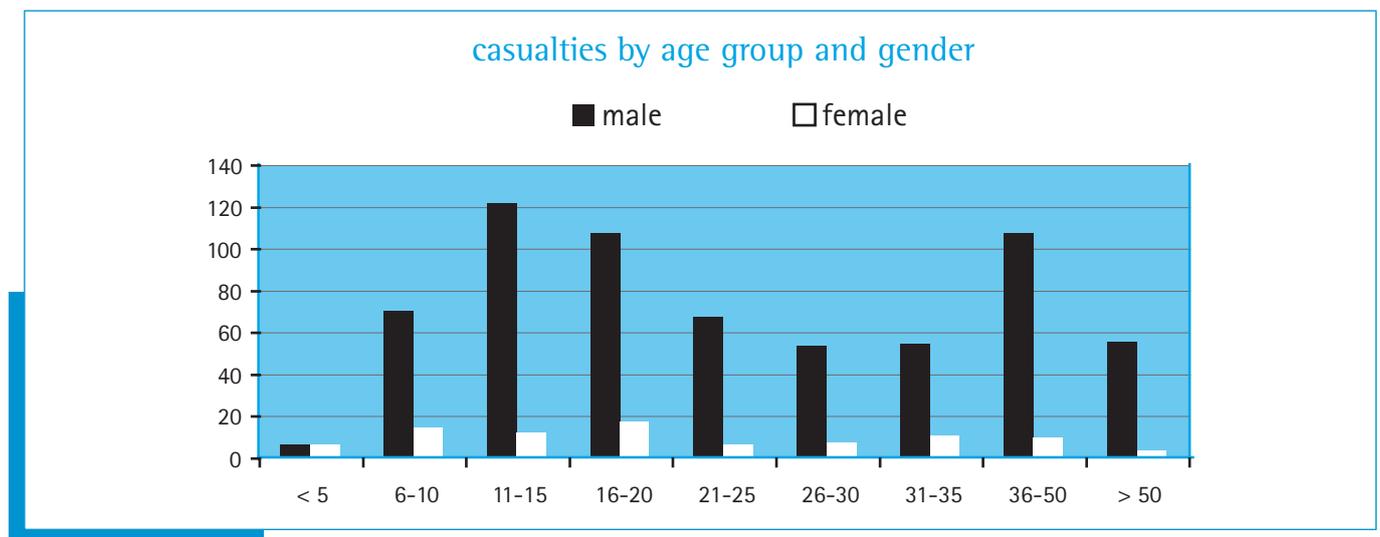
Nomads (*kuchi*) living off tending animals are particularly vulnerable to mines/ERW contaminating their transient routes; reportedly many *kuchi* were also killed during bombings, including cluster munitions strikes.⁵²³ In southern parts of Afghanistan, *kuchi* became casualties while tending animals or collecting scrap metal to supplement their income by selling it in bazaars.⁵²⁴ The economic incentive to collecting war waste puts the *kuchis*, whose way and standard of living has become more endangered, at an increased risk of further deteriorating standards of living as well loss of their culture.⁵²⁵

The 2001-2002 offensive reportedly killed 34,000 livestock; approximately a quarter of these would have been due to mines/ERW, i.e. 9,000.⁵²⁶

■ Children: boys between four and 15

Children (266) make up 36.3 percent of overall casualties and 40 percent of post-strike casualties. Boys are 87.2 percent of child casualties. Most child casualties occur while tending animals (77), playing/recreation (58) farming (24) and collecting food/wood/hunting (22). Children make up nearly 52 percent of casualties while tending animals. As this job is traditionally for boys, 76 of the casualties were boys. Boys were also 95.7 percent of farming casualties and 84.3 percent of collecting/hunting casualties.

Children made up 84 percent of the cluster submunitions casualties that occurred while playing and 47.6 percent of tampering casualties. Most child tampering casualties occurred after the 2001 offensive and constitute the second-largest group for that period. However, when considering all ERW casualties during that time, boys are by far the largest group among ERW tampering casualties, at 69.5 percent for the post-strike period (105 of 151).



In total, four children were involved in military activity or policing at the time of a cluster submunitions incident, three boys aged eight, 12 and 14 and one nine-year-old girl.

Children between five and 14 are most at risk of becoming cluster submunitions casualties, especially boys of that age, who constitute 71 percent of all child casualties. The LIS found that 17 percent of total recent casualties recorded between 2002 and 2004 were between five and 14 years old, the highest rate for this age group in any country in which an LIS has been conducted. Most of the children were engaged in herding (43 percent) at the time of the incident, followed by doing household chores such as collecting firewood and water (31 percent). The Centers for Disease Control and Prevention (CDC) review of surveillance data indicated UXO was the main cause of injury to this young age group.⁵²⁷

The 2002-2004 period observed in the LIS concurs with the immediate aftermath of the US strikes and the beginning of the lower-intensity post-conflict period. During this time, 52.6 percent of all boy cluster munitions casualties between January 1980 and December 2006 were recorded (122 of 232). At 76.2 percent, the vast majority (93) was aged between five and 14. Children in the four to 15 age group are also the second largest group of people with disabilities in Afghanistan, at 25.8 percent. The largest group is people of 45 and older (26.8 percent), most of whom are male war veterans.⁵²⁸ These two factors combined result in a significant socio-economic loss for Afghanistan in both the immediate and long term.

Major areas of impact

In 2002, it was reported that mines/ERW contaminated "an estimated 150.6 square kilometers of previously uncontaminated land, and added to, or re-contaminated, an estimated 62.4 square kilometers of previously contaminated land."⁵²⁹ The 2005 LIS estimated that 715 square kilometers of land is impacted by mines/ERW.⁵³⁰ The majority of cluster munitions seems to have fallen on civilian areas. Clearance operators indicate that although military installations were the primary intended target, about 70 percent of the contamination was to be found in or close to civilian areas. This ratio applies for both Soviet and US cluster munitions.⁵³¹

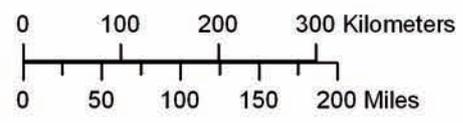
AFGHANISTAN

Cluster munitions and casualties per district

Legend

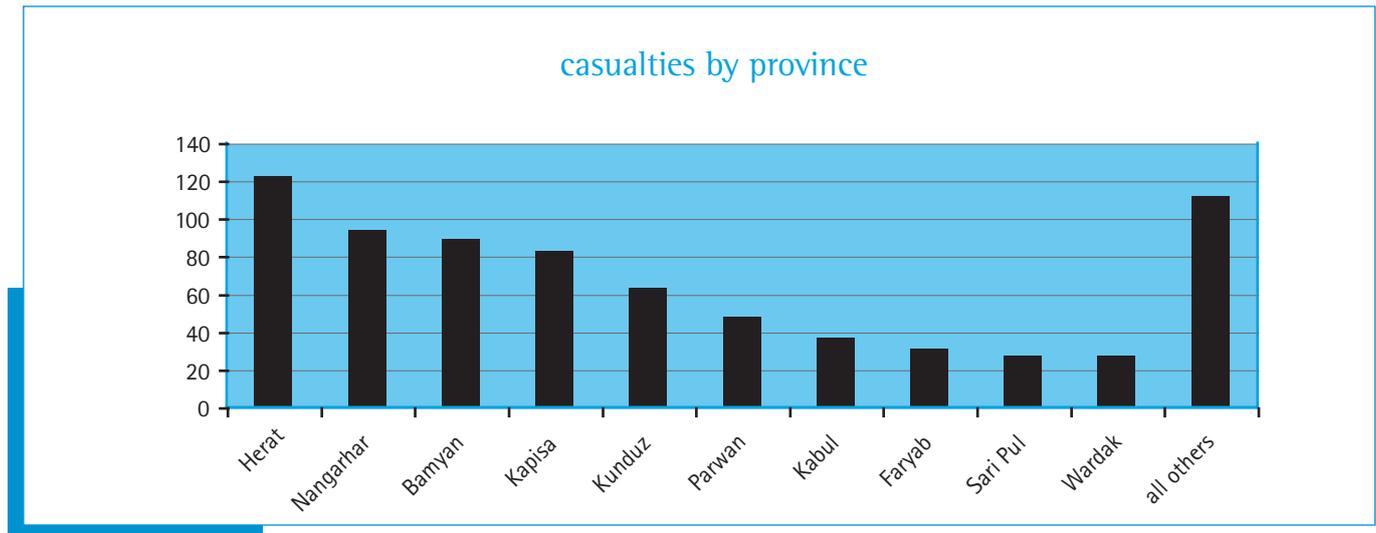
 Country boundary	Casualties per district
 Province boundary	 No casualties reported
 National capital	 1-20 casualties
 Province capital	 21-40 casualties
 Cluster munitions strikes	 41-73 casualties

Boundary representation is not authoritative
 Cluster munitions used by US from 2001 to 2002
 Cluster submunitions casualties from 1980 to 2006
 1/04/2007



■ Civilian population centers and adjacent fields

The most mine/ERW-affected provinces in Afghanistan are Kabul, Parwan and Baghlan. The source of mine/ERW contamination in these areas links to major battle areas during the Soviet occupation.⁵³² Analysis of strike data reveals that all major cities in Afghanistan were targeted with cluster munitions. UNMACA data indicates that Herat (3rd largest city) was struck 49 times, Kandahar (2nd largest city) 46 times, Kabul (the largest city) 20 times, Taliban stronghold Kunduz (5th largest city) 18 times, Mazar-i-Sharif (4th largest city) 16 times and Jalalabad (8th largest) 13 times.⁵³³ When looking at cluster submunitions casualties, Kabul and Parwan provinces rank seventh and sixth respectively. Herat province and Nangarhar province with its capital Jalalabad rank highest in terms of cluster submunitions casualties. Overall, Kabul has the most mine/ERW casualties, followed by Nangarhar, Parwan (capital Charikar, 9th largest city) and Herat.



In 2001-2002, cluster munitions were also used against villages and their environs where Taliban were hiding. At times, villages would be empty during the conflict, such as the frontline villages in the Shomali Plain. However, many villagers returning to the deserted villages soon after the war were exposed to the dangers of unexploded submunitions. For example, by March 2002, 10 percent of families had already returned to the bombed villages on the frontline of the Shomali Plain.⁵³⁴

During the 2001-2002 offensive, property losses due to the conflict were significant and approximately one out of nine households suffered property damage, with 33,000 residential buildings and 2,000 shops destroyed. Water and irrigation seems to have suffered less damage from cluster munitions.⁵³⁵

■ Fields caught in the middle

As Taliban targets were often mobile, the US opted to use BLU-97 submunitions, which can cover a large surface area. In addition, Taliban military positions were often close to populated civilian areas, leading to the contamination of adjacent fields. Taliban would often hide in orchards and fields on the outskirts of villages which were used for subsistence farming and thus frequented regularly by civilians.⁵³⁶

For example, strikes targeting a Taliban military base hit Ishaq Ismail village in Herat province instead and killed at least eight people. ICRC records show that at least nine casualties occurred due to failed cluster submunitions, one as recent as February 2004. Seven of the casualties were boys under 18, either playing or tending animals.⁵³⁷

When cluster submunitions affected civilian areas, they would receive the same priority-setting as other mines/ERW.⁵³⁸ In 2002, most residential land was cleared (31 percent), followed by agricultural land (29 percent), grazing land (22 percent), roads (17 percent) and irrigation (one percent).⁵³⁹ Of 56 strike sites located in Kandahar province, 41 were in grazing and agricultural land, only two were in residential areas, and the rest were not surveyed for security reasons.⁵⁴⁰

When looking at clearance records, it appears that agricultural land, grass land and housing areas were the main areas cleared. A total of 103,750 cluster submunitions were cleared, compared to almost 22,000 mines and 25,000 other ERW cleared in 2002-2003. Most cluster submunitions were cleared in agricultural crop land (41,779), followed by pasture land (33,186) and housing areas (28,747). No roads or airstrips were cleared and only 38 cluster submunitions were cleared in "other" locations.⁵⁴¹ However, some airports and other sites of possible military interest would have been cleared by coalition forces.

Only 18 casualties occurred in areas that were marked, including one military and seven demining casualties. The LIS indicates that only 12 percent of suspected areas are marked or fenced.⁵⁴² Of the civilian casualties in marked areas, five had received MRE and took risk out of economic necessity.

■ Cluster munitions and development

In the aftermath of the fall of the Taliban, reconstruction efforts were boosted with the aid of the international community. As a result, demand for land increased and put pressure on all sources of land and on the infrastructure that supports socio-economic development. "Many infrastructure and social development projects conceived of in 2002 were found to be in mine and UXO affected communities. Hundreds of kilometers of road had to be cleared, in addition to areas for schools, hospitals, and other donor funded reconstruction initiatives."⁵⁴³ Reconstruction projects also altered humanitarian clearance priorities in some cases.⁵⁴⁴

Approximately 5,280 kilometers of road construction/reconstruction and power lines has been planned. The total area of all suspected hazard areas (SHAs) lying within 100 meters of these roads is some 39 square kilometers, which equals about a year of clearance.

Mine/ERW clearance is an integral part of the 2006 Poverty Reduction Strategy Paper (PRSP) for Afghanistan, as one of the key programs to increase human security and development.⁵⁴⁵ Goal 9 of the Country Millennium Development Goals (MDG) for Afghanistan is security, where mine/ERW contamination is considered an obstacle to security. The PRSP indicates that ERW cause 50 percent of casualties and that more than 50 percent of casualties are under 18 years of age. "Insecurity, manifested in the form of landmines...deters people from accessing basic services such as health clinics, and from sending their children to school."⁵⁴⁶ The PRSP notes mines/ERW "pose intolerable risks" to the returning population, use of infrastructure, and livelihood activities. Clearance of development and agriculture land, as well as assistance to survivors and victims, needs prioritization. Continued support for mine action is needed, for "Afghanistan runs the risk of not achieving the relevant MDG target." For example, between 2002 and 2004, three percent of the national budget was allocated to mine action and only 10 percent to health and education.⁵⁴⁷

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives			✓
2 Impact on resources		✓	
3 Impact on public sector		✓	
ST SUBTOTAL		4	3
T TOTAL			7

Impact conclusion

Afghanistan has experienced 22 years of conflict which killed an estimated 2 million people. Mines and ERW have contributed greatly to the harm, leaving 52,000 - 60,000 mine/ERW survivors in the country.⁵⁴⁸ The vast majority of casualties have been caused by antipersonnel mines. However, unexploded cluster munitions have contributed to the problem. People carrying out livelihood activities, as well as refugees and IDPs returning face daily hazards posed to safely accessing the limited arable land, pasture lands, and villages. An increase in scrap metal collection has been remarked since 2001-2002.

Cluster submunitions contamination poses a particular problem for boys between five and 14 years old, who are the second-largest cluster submunitions casualty group and also the second-largest disability group in general. Together with many adult war disabled, this high number of child disabled will put even more of a strain on the very precarious economic situation of many rural families and Afghanistan in general.

Clearance operators did not see failed cluster submunitions as a big problem compared to mines. However, in the immediate aftermath of the 2001-2002 offensive, clearance of unexploded submunitions was prioritized over normal clearance tasks, redirecting resources away from long-term issues and necessitating staff training to deal with a new threat. In light of funding decreases for mine action in 2006, this could be significant. The danger of cluster submunitions remains, as not all new contamination has been cleared. Experts confirm the apparent trend that there will be 25 to 30 new cluster submunitions casualties per year, mostly due to old Soviet contamination but also due to newer US munitions, which have not been cleared. Many cannot be cleared for security reasons.⁵⁴⁹

Capacity to respond

Afghanistan has the oldest and largest mine action program in the world. Afghanistan does not have a national mine action authority, but the Mine Action Task Force has finished drafting national roles and responsibilities. UNMACA (on behalf of the government) is responsible for managing, planning and coordinating all aspects of mine action, including MRE and victim assistance. Implementation of all mine action components is mainly undertaken by national and international NGOs. Mine risk education, including ERW but not specifically cluster submunitions, is increasingly integrated with clearance and explosive ordnance disposal. The Ministry of Labor, Social Affairs, Martyrs and Disabled is responsible for mine/ERW casualties, and several coordination units and task forces exist to improve coordination. However, most services are located in Kabul or a few other main cities. In some areas even basic care is not easily available, and only 20-40 percent of the survivors were reported to actually have access to services.⁵⁵⁰

Recommendations

- In order to reduce the continuing impact of mines, cluster munitions, and other ERW on human security and development, long-term funding and commitment is needed for clearance, MRE and victim assistance.
- Planning of broader reconstruction or development projects should take the needs of mine/ERW *victims* (affected persons, families, communities) into account.
- Pasture land clearance should be reconsidered in the order of clearance priorities.
- Retroactive data collection efforts should be expanded to fully understand the scope of the human impact of mines/ERW, including cluster submunitions.

Community experience

Haji Abdul Malik was in his house in the Baba Ji district of Herat city in 1981 when Soviet aircraft struck the area with cluster munitions. Haji was injured on his hand and leg. On that day, Haji lost 14 of his family members and relatives; the family's houses were destroyed. At the time, approximately 3,000 people were living in Baba Ji district and approximately 80 percent of the houses were destroyed by Soviet cluster munitions strikes. When the Soviet invasion ended (in 1989), about half of the residents of the area repaired their homes. However, as of 2007, Haji can still not afford to reconstruct his house due to economic problems. One small part of the house has been made livable by a relative, but most of the house remains a ruin.⁵⁵¹



Community experience

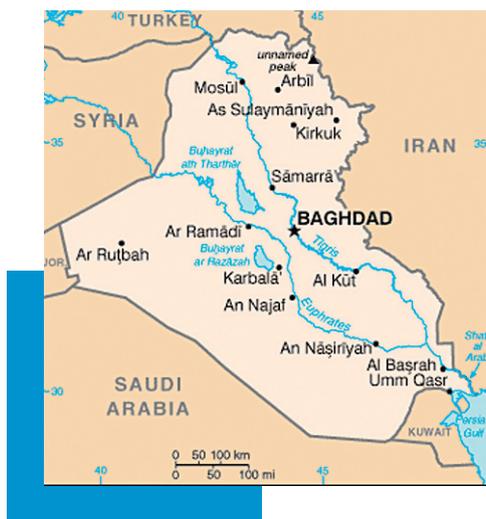
Twenty-six-year-old Abdul Nafee is a farmer living in Mohammadzoo about six kilometers from Grishk town in Helmand province. On 15 October 2006, Abdul Nafee was busy reaping chicken fodder on his land. Another resident of the village, Sayed Mohammad, was there with him when an unexploded submunition was suddenly set off. Abdul Nafee was injured on the leg and shoulder and brought home by his companion. Abdul was first treated in the district hospital, but needed to be sent to the Emergency Hospital in Lashkergah city as the district hospital did not have the capacity to remove some of the shrapnel. Abdul Nafee returned home after treatment, but his shoulder injury is so severe that he cannot use his right hand for work anymore.

Hajji Mir Biland, a village elder of Mohammadzoo, said he remembers the cluster munitions strike: A military force convoy was passing Sra Qala near the village on a security mission. Suddenly a bullet was fired at the convoy. The villagers tried to get the gunman, whom they did not know, out of the village. However, a short while later the village was bombed in five places and hundreds of explosive submunitions were spread around the village. One cluster munition landed on the ground intact and remained unexploded. One house was destroyed completely because of the strikes and other houses were damaged partially.

- We saw submunitions in the fields, orchards and gardens.
- The grapes from this valley were the sweetest in the world; now I have to wait until the land gets cleared and irrigated.
- We picked up the submunitions ourselves to be able to farm the land.
- We put them in trenches and irrigation channels.
- Submunitions with ribbons get stuck in grapevines and go unnoticed until the day they fall.
- Boys get bored and collect metal while herding animals.
- I decided to move submunitions out of the way so children do not step on them, I am old after all.
- How can I look after my children now that I am injured and my husband was killed?



IRAQ



Key findings

- Casualties are underreported in Iraq, especially casualties after strikes.
- A total of 2,989 casualties have been identified.
- Clearance is hindered by the security situation.

Country indicators⁵⁵²

GDP (purchasing power parity): US\$87.9 billion (2006 est.)

GDP - per capita (PPP): US\$2,900 (2006 est.)

GDP - composition by sector: (2004 est.)

- *agriculture:* 7.3 percent
- *industry:* 66.6 percent
- *services:* 26.1 percent

Labor force - by occupation: 7.4 million (2004 est.)

- *agriculture:* 80 percent
- *industry:* 10 percent
- *services:* 10 percent (2004 est.)

Unemployment rate: 25 to 30 percent (2005 est.)

HDI: N/A

Measures of poverty and development: Chronic poverty in southern and central Iraq is around 21 percent.

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used during Operation Desert Storm in 1991, the 1998 Operation Desert Fox, subsequent US-led Coalition Forces operations since 2003 and, allegedly, Iraq used cluster munitions during the Iran-Iraq War between 1980 and 1988.

Cluster submunitions used: Among others, BLU-61/63/91/92 97/108, Mk118 (Rockeye), M42, M46, M77, RBL-755, and KB-1. Iraq had large stocks of Soviet-made cluster munitions. A full list of submunitions and their dispensers found in Iraq can be found in the Iraq Ordnance Identification Guide in support of the US Department of Defense humanitarian mine action program.⁵⁵³

Number of cluster submunitions used: The full extent of the number of munitions used is not known, due to very partial strike data availability. Moreover, at least 50 million artillery- or air-delivered submunitions were used between 1991 and 2006. The Mine and Explosive Ordnance Information Coordination Center (MEOICC), a Coalition Force asset, has provided strike data to the National Mine Action Authority (NMAA).⁵⁵⁴ However, this information was not made available.

Contamination estimate: At least 2.6 to 6 million submunitions failed to explode upon impact. In 2003, strikes targeted cities and areas mainly in the southern parts of the country, but contamination was also found just south of the Green Line in northern Iraq. Supposedly, certain non-state armed group positions in northern parts would have been targeted too. During the Gulf War, the so-called highway 80 (or "highway to hell"), leading from al-Jahra in Kuwait to Basra was one of the most targeted places.⁵⁵⁵

Failure rate estimate: Official failure rates vary from seven percent (BLU-97) to 26 percent (BLU-26). Failure rates on the ground are higher due to incorrect delivery, as well as soil conditions, approximately 30 percent would not have exploded.⁵⁵⁶ The Mk118 (Rockeye) munitions would have had a failure rate of up to 40 percent.⁵⁵⁷

Number of recorded casualties: Complete casualty data is not available due to insecurity, lack of political will and lack of data management capacity. Casualty data compiled from several sources indicates that at least 2,989 cluster submunitions casualties have been recorded as of April 2007.

Estimated casualties: Research indicates that there are at least 5,500 to 8,000 cluster munitions casualties in total. This number is likely to be higher, as very limited public information is available on most casualties occurring after strikes.

Human impact measure

Data collection

Sources of information on cluster submunitions casualties are fragmented and incomplete, due to security reasons and a lack of capacity but also discouragement of casualty data collection and its public availability.⁵⁵⁸

As of April 2007, there was no data collection mechanism for new mine/ERW/IED casualties in Iraq. However, the UNDP has engaged a data expert to work on data management at the NMAA and various fragmented data sources are available. Local data collection projects have halted work due to the security situation. The Iraq Landmine Impact Survey (ILIS) expected for publication in the last quarter of 2006, had not yet been released on 1 May 2007. The ILIS could not survey certain south-central provinces due to the security situation, but among those are Baghdad and Anbar governorate, both are contaminated with cluster munitions. As a result of very partial data collection and the ongoing conflict in Iraq, analysis of the human impact of cluster submunitions cannot be considered complete, nor is it dealt with as a priority item in Iraq.

Casualty data analysis⁵⁵⁹

Confirmed casualties: 1991-2006					
	Total	Strike	Post-strike	Post-conflict	Unknown
Grand total	2,989	388	1,565	102	934
Injured	1,591	260	860	61	410
Killed	1,381	128	705	41	507
Unknown status	17		0	0	17
Man	261	115	139	7	
Woman	63	42	19	2	
Boy	97	41	46	10	
Girl	56	32	20	4	
Military	125	0	125	0	
Deminer	100	0	100	0	
Unknown	2,287	158	1,116	79	934
Dominant activities	Accidental passing by/livelihood activities				
Dominant location	Near home				

At least 2,989 people were confirmed casualties of cluster submunitions between 1991 and 2007, including 1,381 killed, 1,591 injured and 17 unknown. Among these casualties were at least 280 children. This total does not include 128 cluster submunitions casualties recorded in the NMAA IMSMA database, which also contains more than 8,000 unspecified ERW casualties, many of whom have location IDs, incident dates, injury patterns and multiple casualty rates consistent with cluster submunitions incidents. A more detailed analysis of the IMSMA records was not feasible within the timeframe of this research.⁵⁶⁰

In addition, the totals should be considered incomplete as they do not include any estimates or data that could not be cross-referenced in order to avoid duplication. Analysis of data available, including casualty estimates, would indicate that there were at least 5,500 to 8,000 casualties due to failed cluster submunitions in Iraq between 1991 and 2007. As analysis does not include estimates and casualties where the cause of injury was not confirmed to be due to cluster munitions, 635 civilian casualties (254 killed and 381 injured) in Najaf recorded by HRW are not included, even though most of these are reportedly due to cluster munitions.⁵⁶¹ HRW estimates the total number of casualties due to cluster munitions in 2003 to be over 1,000.⁵⁶² However, UNICEF estimated that more than 1,000 children had been killed or injured "by weapons such as cluster bombs."⁵⁶³ It also does not include 200 to 372 civilians killed during strikes including with cluster submunitions recorded by the Iraqi Body Count.⁵⁶⁴

The ILIS noted that among recent casualties⁵⁶⁵ in the south-central parts of Iraq (Karbala, Najaf, Qadissiya, Wassit and al-Hilla), cluster munitions were "the most important cause of death and injury." These governorates "have the highest rates of victimization... due to the new contamination from the most recent war"⁵⁶⁶ and cluster submunitions casualties account for 77 percent of recent casualties. In Najaf, 83 percent of recent casualties were due to cluster munitions, in Karbala 81 percent, in al-Hilla 80 percent, in Qadissiya 72 percent and in Wassit 67 percent. In comparison, in the four southern governorates (Basra, Dhi Qar, Missan and Muthanna), submunitions accounted for only seven percent of recent casualties. These figures are incomplete as only a limited number of communities were visited due to security reasons. Likewise, analysis of Iraqi Health and Social Care Organization (IHSCO) data recorded between March and June 2006 indicates that 148 of 193 casualties (77 percent) were due to cluster submunitions (compared to 26 antipersonnel mine casualties). Most casualties occurred in Karbala (57), Babil (32) and Baghdad (19).⁵⁶⁷

At least 1,704 casualties have occurred since March 2003, of which at least 388 civilians were injured or killed during strikes. Between 1991 and early 2003, at least 1,232 casualties were recorded. The incident date of 53 casualties is unknown.

One of the only surveys used to assess mine/ERW threats from the Gulf War was undertaken by the ICRC in southern Iraq in 2001. According to this survey, taken some 10 years after the war, many shepherds, including children, were still being injured or killed. The survey identified cluster submunitions and other ERW dropped during the 1991 operation as the main problem.⁵⁶⁸

Data compiled from various sources does not indicate the full scope of the problem, nor does it allow in depth cross-checking and the creation of a casualty profile for risk education and survivor assistance purposes. However, the limited data available indicates that the number of casualties due to cluster munitions is vastly underreported.

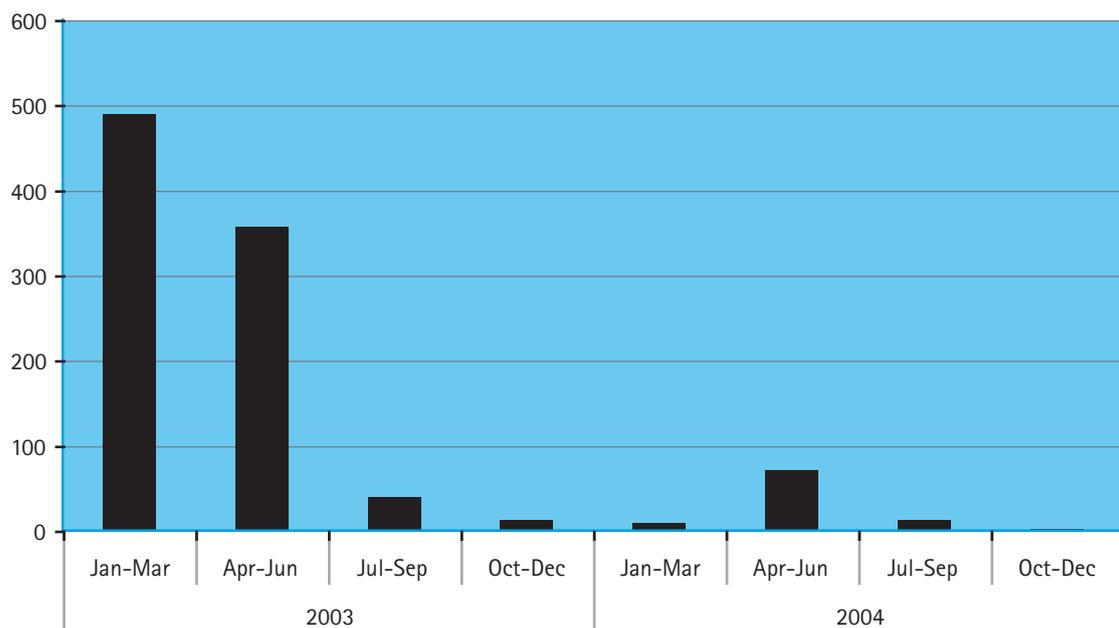
Most impacted groups

■ People during strikes

It is unknown how many people were injured or killed during cluster munitions strikes in the 1991 operation. Targeting seemed to be mainly against military and mixed type installations and materiel, such as infantry, armor, communications, and radar and missile installations.⁵⁶⁹ Most cluster munitions strikes were carried out by the air force, it was estimated that there were approximately 10,000 to 12,000 Iraqi military deaths as a result of the air campaign.⁵⁷⁰ At least a quarter of air-delivered weapons consisted of cluster munitions.⁵⁷¹ One of the most targeted areas was the highway linking Kuwait to southern Iraq, through which Iraqi soldiers retreated at the end of February 2001. Cluster munitions were used on the front and back of the convoy to obstruct withdrawal.⁵⁷² The Iraqi forces' command and control and many targets with mixed military and civilian functions were located in or near Baghdad, which was heavily targeted with precision-guided weapons but also with cluster munitions, the civilian population was also at significant risk of cluster munitions. The Iraqi government claimed that 2,300 civilians died during the air campaign, and the increased prevalence of air attacks from both warplanes and cruise missiles led to much controversy over the level of civilian deaths caused during the initial stages of the war.⁵⁷³

During the 2003 conflict, at least 333 civilians were killed or injured as a result of cluster munitions strikes, mainly in al-Hilla (163), Baghdad (86), Najaf (45) and Basra (29). In April 2004, 55 people were reported injured or killed during strikes in Falluja. Most casualties during strikes were males (156), including at least 41 boys (26.3 percent). At least 74 were females, 32 among them were girls (56.8 percent). The gender and/or age of the other casualties are unknown, but there were at least seven more child casualties without gender details. Most people seem to have been in their houses, fields, shops, schools and mosques at the time of the strikes. Not included in the overall total, is a cluster munitions strike on Iraqi tanks defending Baghdad on 3 April, resulting in 14 killed and 66 injured, according to the Iraqi Ministry of Information.⁵⁷⁴

strike/post-strike casualties by quarter



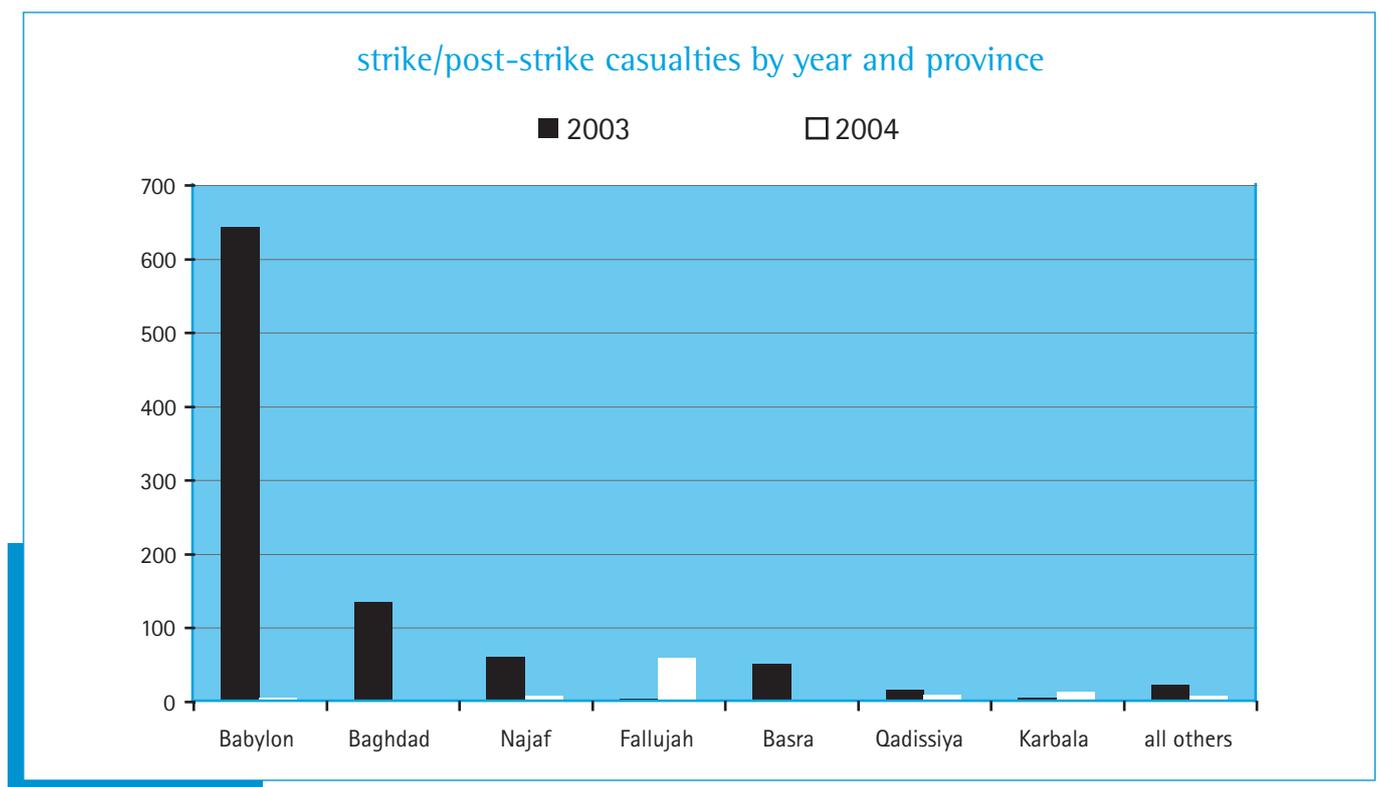
■ People in the post-strike period

Although mainly military and mixed use areas were targeted with cluster munitions in 1991, many cluster munitions were not delivered from the right altitude and recorded a higher failure rate due to anti-aircraft artillery: "The high number of duds, combined with the location of the unexploded bomblets in dual use areas, presented significant risks for the civilian population. The plethora of unexploded bomblets on major roads, for example, put both refugees and foreign relief groups at risk."⁵⁷⁵

More than 4,000 civilians have been killed or injured by failed cluster submunitions since the end of the Gulf War in 1991.⁵⁷⁶ Up to February 1993, at least 1,600 people were killed, including 400 Iraqi civilians, and 2,500 injured due to cluster submunitions.⁵⁷⁷ During the 1991 operation, at least 80 US casualties, including 25 killed, were attributed to unexploded submunitions.⁵⁷⁸ More than 100 EOD experts are reported to have died during clearance activities in the aftermath of the war, including one Egyptian Brigadier General.⁵⁷⁹ Due to the high failure rate of artillery-delivered submunitions, the US military post-conflict casualty rate became so serious that it resulted in a Congressional investigation.⁵⁸⁰

The prime risk group of unexploded cluster submunitions was children, as they were less aware of the risks posed by former battlefields and were attracted by the shape and color of certain types of submunitions. Reportedly, 60 percent of post-strike casualties were children under the age of 15.⁵⁸¹

In the Iraqi town of Safwan, south of Basra on the so-called "highway to hell", "the number of injuries caused by unexploded ordnance rose alarmingly" as the refugee population grew after the ceasefire. Safwan's public health clinic was ruined in the war and US medics said, "We were seeing a lot of old injuries due to the war that had never been treated. Some children had been severely injured playing with cluster bombs."⁵⁸² US emergency ordnance disposal teams made destruction of unstable submunitions first priority and clearance was undertaken within a five-kilometer radius of Safwan.⁵⁸³



In the aftermath of the 2003 cluster munitions strikes (mid 2003–2004), at least 671 people were injured or killed due to unexploded submunitions. At least 39 were females, 20 of whom were girls under 18. There were 185 male casualties in the post-strike period, including 46 boys. At least 120 child and 305 adult casualties without gender details were killed or injured post-strike. Both age and gender details are unknown for 22. There were 36 casualties among foreign soldiers, including three French soldiers killed and 27 others injured since March 2003.⁵⁸⁴ Only three of the military casualties occurred during clearance activities.

An October 2003 mine action needs assessment indicated that, based on the limited information available, "Iraq is the most EO, UXO and landmine impacted country in the world."⁵⁸⁵ In the southern and central parts of Iraq, the main problem was the large amounts of explosive ordnance lying around as a result of the 2003 conflict. It was reported that, "the scale of this problem was initially grossly underestimated" and that the "statistics were collected after the conflict and do not reflect the peak in victim numbers" during the conflict.⁵⁸⁶ The casualty data made available to the assessment identified 539 mine/ERW casualties recorded

in four southern governorates between 1 May and 1 August 2003 (215 from 1 May to 13 June and 324 from 16 June to 1 August). In 2003, a total of 2,120 new mine/ERW casualties were recorded, only 362 of them were confirmed to be mine casualties. It was reported that, in Basra alone, five ERW casualties per week occurred in the aftermath of the conflict.⁵⁸⁷ This is an extremely high figure compared to other highly impacted countries. In 2003, the monthly casualty rate in Afghanistan, which also saw cluster munitions use two years earlier, was estimated at 100 per month.⁵⁸⁸ Of the casualties occurring between May and mid June in the southern region, 30 percent (65) were less than five years old.⁵⁸⁹

The majority of known cluster submunition casualties in the 2003 war occurred in al-Hilla, south-central Iraq. In addition to casualties directly from strikes, submunitions which failed to detonate created a significant humanitarian problem in the period immediately after the strikes.⁵⁹⁰ Significantly, casualties from failed cluster submunitions in al-Hilla occurred almost daily during the weeks following use.⁵⁹¹ Cluster submunitions used, mostly artillery-fired DPICM, caused up to 90 percent of the 221 injuries treated in the al-Hilla hospital between 1 and 11 April 2003. Another 32 injuries from submunitions were reported in al-Hilla for May to August 2003.⁵⁹² Before the full extent of injury from cluster munitions use in al-Hilla was known, the World Health Organization had predicted that they would cause ongoing suffering and compared the effects of submunitions to that of landmines saying "...cluster bombs are meant to maim [and] kill".⁵⁹³

Many returnees and newly displaced people as a result of the 2003 conflict were staying in abandoned military facilities, schools and police stations with little or no basic facilities and potential harm from ERW.⁵⁹⁴

■ People carrying out livelihood activities

Very incomplete information on the circumstance causing casualties both during, but especially after strikes, complicates the analysis of predominant high-risk groups, activities and locations.

For post-strike casualties, only 974 records detailing activities are available. Most casualties were bystanders (263); most of them were near people carrying out livelihood activities, which were the second largest group of casualties at 261. In addition, it needs to be considered that most casualties during strikes were also carrying out livelihood activities in or near the house. The third largest group of casualties was carrying out military activity (203), followed by people stepping on cluster submunitions while walking (100) and playing (61) and tampering/scrap collection (25). Self-clearance caused six casualties and military clearance three.

The relatively low percentage of casualties during livelihood activities compared to other cluster submunitions-affected countries can be explained by the lack of detail in the casualty records compiled. The actual percentage of casualties carrying out livelihood type activities is likely to be much higher as is corroborated by both the IHSCO and ILIS data. Analysis of IHSCO data between March 2003 and 2006 indicates that nearly half of the casualties occurred while carrying out livelihood activities (48 percent): farming (29 percent or 43 casualties), herding (18 percent or 26); and collecting water/wood/herbs (one percent, two). Of total IHSCO casualties (148) 92 people (62 percent) did not know the area was dangerous, but 34 (23 percent) knowingly went into a dangerous area for economic reasons.⁵⁹⁵

Of the ILIS cluster submunitions casualties in southern and south-central Iraq (95), 77 occurred while tending animals (50), farming (22) or collecting (five) this equals 81 percent of total cluster submunitions casualties.⁵⁹⁶ In Qadissiya, the governorate with the most cluster submunitions casualties recorded in the ILIS, 73 percent (19) of the 26 recorded recent casualties were herding at the time of the incident.⁵⁹⁷ Of the total 406 recent casualties recorded by the ILIS in the south and south-central areas, 316 casualties were farming/tending animals or collecting (77.8 percent). Nearly 46 percent of the recent casualties were the breadwinners in the family in the south and south-central governorates, only 16.5 percent of those working in farming or shepherding were still working in these professions after their incident. All but one of the casualties were civilian (99.8 percent).⁵⁹⁸

Nearly 2 million people in the south and south-central parts of Iraq are affected by mine/ERW contamination. Of people interviewed by the ILIS, 87.6 percent indicated that mines/ERW blocked access to farmland and 91.8 percent indicated pasture land blockages. Only 11.9 percent of affected communities in the southern and south-central parts of Iraq had seen demining activity in the two years prior to the survey. In nearly 10 percent of communities, people started clearing mines/ERW themselves to reduce casualties (42.2 percent) or due to economic necessity (46.7 percent). Of affected communities in the southern and central areas, only 3.1 percent had received MRE, compared to 75.5 percent in the northern part of Iraq.⁵⁹⁹

The relatively high percentage of people killed while walking can be attributed to the fact that people needed to use contaminated roads and paths to trade and farm.

■ Men and children

The gender of 1,307 casualties was known; of these 1,056 were male (80.8 percent) and 251 female (19.2 percent). The vast majority of cluster submunitions casualties recorded by IHSCO, some 83 percent of the total, were male (123). Out of 95 ILIS cluster submunitions casualties, 79 were male – also approximately 83 percent. All the recent male casualties in the southern and south-central areas totaled 87.4 percent of casualties.⁶⁰⁰

In line with general mine/ERW casualty profiles in Iraq and other cluster submunitions-contaminated countries, it is most likely that the overwhelming majority of child casualties are male. For example, almost 33 percent of recent cluster submunitions casualties recorded in the ILIS were children aged five to 14 (31 of 95). Twenty-six of the children (81.3 percent) were boys and five were girls.

Analysis of IHSCO data indicates that children accounted for 57 cluster submunitions casualties (39 percent of those 148 casualties recorded by IHSCO); the age group between 11 and 20 is the most impacted, with 43 casualties (75.4 percent). Between May and mid-June 2003, it was reported that, in the southern region, 30 percent of casualties were less than five years old.⁶⁰¹ In the immediate aftermath of the conflict, adult men and boys were considered to be the groups most at risk, and 75 percent of children's injuries in the southern areas were attributed to playing or tampering with ERW.⁶⁰² Of the 61 casualties playing at the time of the incident, at least 25 (41 percent) were children and of those six were female.

IRAQ

Cluster munitions and casualties per province

Legend

Country boundary

Country capital

Main city

2003 cluster munitions strikes

Cluster submunitions clearance tasks

Casualties per province

No casualties reported

1 - 50 casualties

51 - 150 casualties

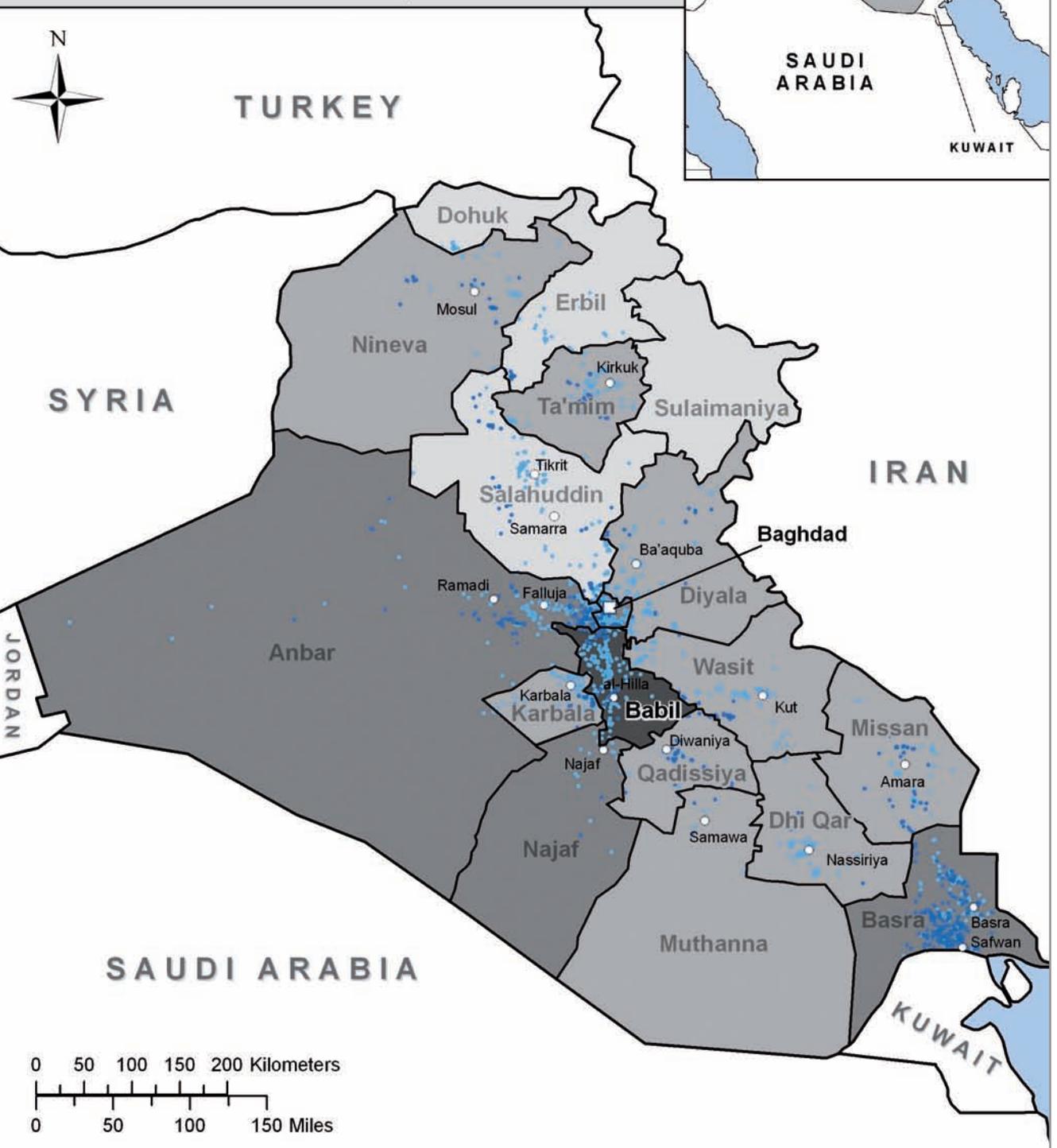
645 casualties

Boundary representation is not authoritative

Cluster munitions used by US in 2003

Cluster submunitions casualties from 2003-2004 only

1/04/2007



Major areas of impact

■ Mixed military and civilian installations

During both the 1991 operation and the 2003 conflict, cluster munitions were used for their wide-area and anti-armor capabilities. In both cases, mixed purpose installations, such as logistics and communications centers, infantry and armor were targeted. The most common targets were armored vehicles, movable missile installations (mainly Scud missile launchers in 1991) and other military materiel, they were also used to "disrupt, delay, or channel the movement of hostile forces."⁶⁰³ It was stated that, in 1991, these targets were often positioned in isolated locations.⁶⁰⁴

However, difficulties in pinpointing and attacking individual mobile (Scud) targets "eventually drove tactical planners to an increased emphasis on suppressive tactics, which included dedicated B-52s armed with CBU-58s, (cluster munitions), making preemptive strikes in the Scud boxes [areas where Scuds were suspected to be located] from 19 February through the end of hostilities."⁶⁰⁵ The cluster munitions were dropped from a higher altitude than normal resulting in indiscriminate scattering of cluster submunitions over a wide area.⁶⁰⁶ These indiscriminate strikes created cluster submunitions contamination throughout Iraq. Following the war, tens of thousands of unexploded submunitions were cleared from civilian areas and infrastructure, such as roads, electrical power plants and communications.⁶⁰⁷ According to a US government report, accumulations of thousands of US cluster submunitions, which failed to explode on impact "created unintended de facto minefields." The large amount of unexploded ordnance left in Iraq resulted in "unacceptable casualties" among coalition soldiers and Iraqi civilians.⁶⁰⁸

One Iraqi prisoner of war from the conflict in 1991, "apparently a veteran of the Iran-Iraq War, stated that Coalition bombing had been "the worst thing he had ever experienced in combat" and went on to assert that the B-52s were particularly bad."⁶⁰⁹ The number of cluster munitions dispensed was so significant that it was known as "steel rain."⁶¹⁰

The priority targets of the coalition forces in 1991 were: leadership, telecommunications and command, control, and communications mainly located in and around Baghdad; ballistic missiles (or modified Scuds); electricity; refined petroleum; military storage facilities; and (rail)roads and bridges. Like this, all the key bridges, roads and rail lines immediately south of Basra and Nassiriya were destroyed, as well as many facilities in and

around Baghdad.⁶¹¹ Widespread infrastructure destruction during the ground war affected the Iraqi population, and for years after the war, electricity production was less than a quarter of its pre-war level. The destruction of water treatment facilities caused sewage to flow directly into the Tigris River, from which civilians drew drinking water resulting in widespread disease.⁶¹²

In 2003, much of the cluster munitions were used by coalition forces in the southern-central governorates, as they advanced towards Baghdad. These are the main source of recent cluster submunitions casualties according to ILIS data. Most known cluster munitions casualties resulting from use in the 2003 war occurred due to use in or near populated areas. It was acknowledged that cluster munitions were used in built-up areas, albeit against military materiel, such as tanks, artillery and missiles. The US stated that Iraq placed many military targets near civilian populations.⁶¹³ At times, the coalition decided to use cluster munitions as a calculated risk to civilians. Colonel Lyle Cayce, adviser to US infantry on the use of munitions in Iraq said, "It was the enemy who was putting his civilians at risk. ... They put their artillery right in town. Now who's at fault there?"⁶¹⁴ One of these cases was recorded by HRW, in Hay Tunis a neighborhood in Baghdad, cluster munitions were delivered on military vehicles in a date grove, but this grove was surrounded "on at least two sides [by] a densely populated, residential neighborhood." At least four children were injured during the strike and several post-strike casualties occurred.⁶¹⁵

In 2003, major cities seem to have been targeted by coalition forces using cluster munitions, particularly Baghdad (largest city, 5.6 million), Basra (second largest, 2.2 million) Najaf (seventh largest), Karbala (eighth largest) al-Hilla (13th largest) and Falluja (15th largest). The impact of ERW on the Baghdad population has been significant, as the "urban population not used to this type of contamination suddenly had to deal with a large-scale UXO problem."⁶¹⁶ HRW found that artillery-delivered cluster munitions were "used extensively in populated areas" and represented "one of the leading causes of civilian casualties in the war."⁶¹⁷ Nevertheless, the US stated that only 26 cluster bombs had landed in civilian areas, resulting in one casualty.⁶¹⁸ However, relief workers said that the reality in the field does not corroborate this, exactly because of the proximity between military installations and civilian centers. At al-Hussein hospital in Karbala, for example, 35 civilian casualties were brought in, many of whom were injured as a result of cluster submunitions.⁶¹⁹

■ Livelihood and development areas

Agriculture is one of the largest contributors to GDP in Iraq (13.6 percent) and provides employment to approximately 37 percent of the population. Only half of the cultivable land is used for cultivation (13 percent of Iraq's territory).⁶²⁰ Access to a significant proportion of agricultural land is blocked by mine/ERW contamination. Areas in the south are predominantly contaminated with ERW, including cluster munitions, and major ERW contamination also exists in and around Baghdad and al-Hilla.⁶²¹ In the south and center of the country, the vast majority of people indicated continued blocked access to agricultural (87.6 percent) and pasture land (91.8 percent).⁶²² For example, in Safwan, south of Basra, 1991 cluster contamination reportedly still had a significant socio-economic impact and clearance was ongoing until the end of 2006. Cleared areas will be used for herding and tomato farming. Several people, including farmers and children, had been killed and local people work in the area daily and expand their fields.⁶²³ In Babil, where al-Hilla is located, blockage of pasture and agricultural land was 100 percent, in Karbala 95 percent of pasture land and 85 percent of agricultural land was considered blocked.⁶²⁴

Unexploded cluster submunitions also contaminated water sources, community facilities such as schools and hospitals, and development and reconstruction areas. They slowed economic recovery because industrial areas, power stations, communication facilities, and neighborhoods had to be cleared before they could be reconstructed. Iraqi authorities said that they removed tens of thousands of unexploded cluster submunitions from such areas after 1991.⁶²⁵

A further danger to development and civilian populations is the significant presence of derelict military sites, military scrap yards and abandoned ammunitions storage, many of which contain cluster submunitions. These facilities are used for scrap collection and for (future) human settlements and pose risks to people due to the ERW, as well as any toxic waste located in these areas. Displaced people or returnees are known to have settled there, people looking to supplement their income have foraged these sites and "scrap metal export is currently one of the few thriving industries in Iraq." Additionally, contamination with ERW requires clearance prior to urban (re)development, for which several of these sites are destined.⁶²⁶

A complicating factor to submunitions contamination is that security problems restrict removal of ordnance in central and south Iraq, which leaves both urban and rural populations facing increased risk from ERW, including the cluster munitions used during the 1991 and 2003 war.⁶²⁷ In addition to that reporting, recording, and marking of hazardous cluster submunitions areas resulting from the 1991 war was not always fulfilled when needed.⁶²⁸ As of 2007, all but a few clearance operators are still working in the affected parts of southern Iraq, despite significant remaining contamination. In the first four months of 2007, Danish Demining Group (DDG) destroyed 2,645 cluster submunitions in Basra governorate.⁶²⁹ As a result of the ongoing conflict, no humanitarian clearance has taken place in the northern-central governorate of Tikrit or the large western governorate of Anbar. The Iraq Mine UXO Clearance Organization (IMCO) shifted to clearance around infrastructure, operating with protection provided by the Iraqi army, due to deteriorating security as of 2005.⁶³⁰

■ Cluster munitions and development

In the emergency post-strike period the World Health Organization declared "that injuries suffered as a direct result of this conflict are the number one public health problem in Iraq."⁶³¹ The conflict simultaneously restricted access to health facilities: three percent of primary health care centers had unexploded ordnance in their immediate vicinity and there was significant infrastructure damage to 12 percent of hospitals. Over 25 percent of primary care centers closed as a result of the 2003 conflict.⁶³² Services during the conflict were also delayed due to cluster submunitions contamination, for example, ambulances were prevented from immediately evacuating civilian casualties from a cluster submunitions affected neighborhood in al-Hilla due to the risk of detonating failed submunitions on the road at night.⁶³³ Several hospitals in al-Hilla, Najaf were overwhelmed with patients after the cluster munitions strikes.⁶³⁴ The ILIS indicated that 90 percent of communities surveyed in southern and central parts of Iraq did not have medical facilities.⁶³⁵

It is estimated that approximately 21 percent of the population in the southern and central parts of Iraq are chronically poor (4.6 million), meaning they are unable to meet their basic needs over long periods of time, even after taking into account assistance provided through food aid. Basra governorate is particularly noteworthy in that all of its districts are classified as having either high, or very high chronic poverty rates (between 34 and 85 percent chronic poverty). This situation has deteriorated, because, during the 2003 war, income-generating activities for many Iraqi households came to a halt, or near halt. Shops and private sector businesses remained closed, and public sector employees were not paid.⁶³⁶

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives			✓
2 Impact on resources			✓
3 Impact on public sector		✓	
ST SUBTOTAL		2	6
T TOTAL			8

Impact conclusion

Cluster munitions use over various points in time has severely affected civilian populations both during and after strikes. The mixed nature of locations targeted with cluster munitions and the targeting of populated centers in 2003, bring cluster munitions contamination in proximity of civilian populations and their livelihood activities. Due to the ongoing conflict and the lack of data collection, the full scope of the human impact of cluster munitions use is not known. However, it is likely that the number of casualties is significantly higher than the available figures, especially for both the 1991 and 2003 post-strike/conflict periods. Due to ongoing security concerns and incomplete marking, large quantities of ERW and other military scrap cannot be cleared. Therefore, it continues to pose risks to the civilian population, blockage to agricultural, pasture and development land and provides a dangerous economic incentive for some.

Capacity to respond

Iraq's National Mine Action Authority (NMAA) is responsible for implementing the national mine action strategy with the support of the UNDP and RONCO. Regional Mine Action Centers were established in the north (Erbil) and south (Basra) and operate under NMAA. The northern mine action center developed into the Iraqi Kurdistan Mine Action Center (IKMAC) in Erbil and the General Directorate for Mine Action (GDMA) in Sulaimaniya governorate, but reunification is planned. Clearance/explosive ordnance disposal is undertaken by national non-governmental actors, international NGOs and agencies, commercial operators and military personnel. However, the security situation continues to cause great difficulties for clearance operations, and many operators have ceased activities in southern and central areas. Mine/ERW risk education is coordinated by the NMAA but implemented by national and international NGOs, as well as the Iraqi Red Crescent Society with ICRC support. However, most of the activities are conducted in the relatively safe northern parts of Iraq. It is not known if cluster submunitions specific MRE is conducted.

Although victim assistance is said to be included in Iraq's mine action strategy, it has been reported that Iraq does not have survivor assistance activities in its national mine action program due to the political and security situation. Since the 2003 conflict and its aftermath, the health sector and social services have seriously suffered with the exception of the Kurdish governorates where the victim assistance program is also functioning well "considering the circumstances". The ICRC, national and international NGOs and agencies provide medical relief and support to the casualties of conflict. Some rehabilitation services exist but their capacity is inadequate due to lack of materials and trained staff. Community-based rehabilitation programs are available in Iraq and there is a lack of psychosocial support and socio-economic reintegration services.⁶³⁷

Recommendation

- The establishment of a nationwide casualty data collection mechanism that facilitates planning of clearance, victim assistance and development activities.

Community experience

Humam Amr is a 44-year old man from Hay Nadir al-Thalitha, in Babil city. He is married and lives together with 14 family members, his wife and children but also brothers and sisters. On 29 March 2003, he decided to start clearing his house of cluster submunitions which had entered during the strikes just a little while earlier. He knew the danger of these weapons but felt forced to remove them for the safety of the children in the house. However, while he was carrying out his dangerous task one of the submunitions exploded and he was injured. Immediately, he was brought to the public hospital in Babil, where his left thumb was amputated and his shrapnel injuries were treated. Fortunately, his other injuries were not very severe. But, even though people respect him for what he has done, he

still feels they look at him as a victim who has a great responsibility for a large family, which he might not be able to carry. Therefore, he finds the psychological trauma of his incident far more difficult to deal with than the physical problems. He is not interested in seeing his friends anymore and has not received any support from either the government or non-governmental organizations.



Community experience

Fourteen-year-old Amir Mohammed lives with his parents and three sisters in Abu Tiheen, Karbala. On 22 March 2003 he and at least six others went out to a piece of land near to the old pediatric hospital in the center of Karbala, to farm the land. There was one young woman and the others were young men between 14 and 34 years old. They all knew that the area around the hospital was contaminated with unexploded cluster submunitions. However, they were forced to work there due to economic necessity. Amir Mohammed was working while one of the others, Ali Mohammed, accidentally set off the cluster submunition while working with his plough.

problems. But the incident has had severe psychological side-effects, and he is often afraid to go out alone and suffers from epilepsy-like strokes. He has difficulties earning a living for himself, his wife and child. He used to be a laborer before the incident but is now assisting in a grocery shop and in a sweets workshop.

Amir Mohammed who was standing nearby received shrapnel in his legs. One person died and the five others were also injured. They were transferred to al-Hussayni public hospital, Amir Mohammad reached the hospital within half an hour. However, they were only able to give him first aid and he still suffers severe pain in his legs because his injuries were not looked after properly. There are still shrapnel fragments in his leg, which make walking more difficult, especially when it gets colder in winter. However, he is still young and most of his injuries are not obvious for people. He continues going to school and his dream is to become a teacher. He is determined not to let his injuries interfere with his dreams.

Ali Hussayn, 22, was also involved in the incident and needed a leg amputation. He has received a prosthetic leg and had it replaced once, but he did not receive physiotherapy treatment. Even with a prosthetic he was not able to continue working as a farmer, which has proven to be a burden on his parents and eight brothers and sisters. He does not know where he can receive socio-economic reintegration support. One of his other main preoccupations, however, is that he will never be able to marry, because of his amputation. His sister died in the incident.

Ali Mohammed, 26, detonated the cluster submunition in the field on 22 March, he did not see the failed device and, at the time of the incident, he did not know that he set off a cluster submunition. Ali Mohammed sustained shrapnel injuries all over his body and head. He underwent surgery to remove the shrapnel but no follow-up was provided. As a result he still suffers physical

Two of the other men sustained severe shrapnel injuries to the stomach, back and pelvis. Another one sustained shrapnel injuries to his neck.⁶³⁸



ISRAEL



Key findings

- The human impact of cluster munitions in Israel appears to be limited but the full scope of the problem is not known as the "Israel Police Bomb Disposal Division collects the data but a large portion of the data is classified and cannot be used for research purposes."⁶³⁹
- At least 13 casualties occurred during cluster munitions strikes.
- Clearance of unexploded ordnance took six months.

Country indicators⁶⁴⁰

GDP (purchasing power parity): US\$166.3 billion (2006 est.)

GDP - per capita (PPP): US\$26,200 (2006 est.)

GDP - composition by sector: (2006 est.)

- agriculture: 2.6 percent
- industry: 30.8 percent
- services: 66.6 percent

Labor force - by occupation: 2.6 million (2006 est.)

- agriculture: 1.8 percent
- industry and services: 98.2 percent

Unemployment rate: 8.3 percent (30 September 2006)

HDI: 0.927, Israel is ranked 23rd out of 177 countries in the high development group and is the highest-ranking country in the Middle East and North Africa.⁶⁴¹

Measures of poverty and development: Measures of poverty and development: Israel is one of the 63 richest countries in the world and has been defined as a high-income economy by the World Bank.⁶⁴²

Disability spending: The Israel National Insurance Services (Bituach Leumi) cover the cost of treatment for all Israeli citizens injured by 'explosions'. Coverage is also provided for students and tourists, but not for Palestinian residents in the Occupied Territories.⁶⁴³

Cluster munitions: country summary

Use period: Hezbollah used cluster munitions during the July-August 2006 conflict between Israel and Lebanon.

Cluster submunitions used: Hezbollah used Chinese-manufactured Type-81 cluster munitions delivered in enhanced 122mm Katyusha-type rockets, each containing 39 MZD submunitions, shooting out hundreds of 3.5mm steel spheres.⁶⁴⁴

Number of cluster submunitions used: At least 117 Type-81 cluster munitions rockets were identified by the Bomb Disposal Division of the Israeli police, containing 4,563 submunitions.⁶⁴⁵ However, the number of cluster munitions delivered is unknown, as only some 1,600 of 3,970 Hezbollah-delivered rockets were identified by type.⁶⁴⁶

Contamination estimate: Israel has not made details of the cluster munitions strikes available, reportedly for security reasons. However, locations hit by cluster munitions included Kfar Mrar,⁶⁴⁷ Carmiel, Kiryat Motzkin, Nahariya, and Safsufa in northern Israel.⁶⁴⁸ Police EOD teams conducted immediate debris clearance, but did not conduct a technical survey to determine the extent of the contamination.⁶⁴⁹

The Ambassador of Israel to Belgium stated on 15 September 2006 that "unexploded munitions remaining after the cessation of hostilities poses a problem in both Israel and Lebanon" but that "Israel does not spare any efforts to detect these weapons and render them safe."⁶⁵⁰ The police reported that the clearance operation of all unexploded ordnance, including failed cluster submunitions, took six months. The operation was carried out by the police, border guards, and volunteers supervised by EOD experts.⁶⁵¹

Failure rate estimate: The official failure rate of MDZ cluster submunitions is unknown, but appeared to be relatively high in Israel, most likely due to incorrect delivery techniques.

Number of recorded casualties: At least 13 casualties occurred during strikes. Casualties from unexploded cluster submunitions have not been reported.

Estimated casualties: The number of casualties due to cluster munitions during strikes might be higher, as similar incidents occurred with unspecified munitions.

Human impact measure

Casualty data collection

The total number of cluster submunitions casualties in Israel is not known, as "a large portion of the data is classified and cannot be used for research purposes."⁶⁵² There is no mine/ERW casualty data collection mechanism in Israel, even though Israel is a mine/ERW-affected country.

Cluster submunitions casualties, like other mine/ERW casualties, would have been recorded as "Victims of Hostile Activities" by the Israel Defence Forces (IDF), a category which includes people killed and injured by suicide bombers, for example. Hospitals record mine/ERW casualties under the category "explosion casualties", which, for example, also includes household accidents.⁶⁵³

The Israeli Ministry of Foreign Affairs (MFA) lists 43 civilians and 119 IDF soldiers killed during the 12 July-14 August 2006 conflict, but does not differentiate cluster submunitions casualties and does not specify the cause of death in all cases. The lists do not include people who were injured.⁶⁵⁴

Casualty data analysis

The Bomb Disposal Division of the Israeli police confirms 13 casualties from cluster munitions strikes, one person killed and 12 people injured. The casualties occurred on 17 and 22 July in Carmiel, 24 July in Kiryat Motzkin, and 25 July in Nahariya and Kfar Mrar.⁶⁵⁵

Kfar Mrar suffered the most casualties, with one killed and six injured. This includes one man, one woman, and an eight-year-old boy injured during a strike on 25 July 2006. Additionally, three people were injured by cluster submunitions in Karmiel, two were injured in Kiryat Motzkin, and one injured in Nahariya.⁶⁵⁶ The fatality in Kfar Mrar does not appear to be included in the MFA list.⁶⁵⁷

Information about post-strike casualties due to cluster munitions is not available.

Civilian casualties of Katyusha strikes include at least 20 men, five women, five boys and two girls killed.⁶⁵⁸ Additionally, at least 4,262 civilians were treated in hospitals: 33 were seriously injured, 68 moderately, and 1,388 lightly.⁶⁵⁹ Unspecified Katyusha strikes on Kfar Mrar on 25 July 2006 killed one more girl and injured two women. During a Katyusha strike on Kfar Mrar on 4 August 2006, one woman was killed and her young son and daughter were injured.⁶⁶⁰ It is unknown if these strikes contained rockets enhanced with cluster munitions.

A Katyusha rocket containing steel ball bearings struck a railway depot in Haifa on 16 July 2006, killing eight men and reportedly injuring dozens more.⁶⁶¹ Twelve Israeli soldiers were also killed in a single Katyusha strike.⁶⁶²

Most impacted groups and areas

The rockets used by Hezbollah, including those with cluster munitions, do not have guiding mechanisms and cannot be targeted at military installations with precision. They appear to have been used in or near civilian areas.⁶⁶³ It seems that many of the cluster munitions delivered by Hezbollah were not deployed correctly, and it is unclear what their military use would have been.⁶⁶⁴ Cluster munitions seem to have been used in exactly the same fashion as other types of rocket-delivered munitions.

The number of casualties seems to be relatively limited, as many people fled northern Israel and others stayed in shelters and secure rooms throughout the conflict.⁶⁶⁵

Following the conflict, "a large-scale operation was conducted whereby EOD teams from all over the country were called to search, locate and handle the various unexploded bombs in the hit areas" and cleared 117 cluster submunitions.⁶⁶⁶

Impact conclusion

Although the impact of cluster munitions in Israel was limited and clearance was swift, there was a civilian cost and clearance reportedly cost "millions of Shekels".⁶⁶⁷

Capacity to respond

There is no national structure responsible to manage and coordinate demining activities, but the IDF Engineering Corps, the police Bomb Disposal Division and commercial Israeli contractors clear mines and ERW.⁶⁶⁸ Israel has adequate capacity to provide assistance to casualties 'from explosions.'

Recommendations

- If Israel does not already do so, casualties due to mines and ERW, including cluster submunitions, should be differentiated from other 'explosions' casualties.
- In order to enable a clear picture of the situation to emerge, Israel needs to become more transparent in sharing what cluster munitions strike and casualty data it does possess.

KUWAIT



Key findings

- Cluster munitions contamination, albeit greatly reduced, continues to hinder industrial and commercial development, as well as shepherding.
- At least 198 casualties occurred in Kuwait, mainly during post-conflict clearance. A lack of data on civilian casualties prevents developing an understanding of the full scope of the human impact.

Country indicators⁶⁶⁹

GDP (purchasing power parity): US\$52.17 billion (2006 est.)

GDP - per capita (PPP): US\$21,600 (2006 est.)

GDP - composition by sector: (2006 est.)

- **agriculture:** 0.4 percent
- **industry:** 48.3 percent
- **services:** 51.3 percent

Labor force - by occupation: 1.136 million (2006 est.)

Unemployment rate: 2.2 percent (2004 est.)

HDI: 0.871, Kuwait is ranked 33rd out of 177 countries in the high development group and is the second-highest ranking country in the Middle East and North Africa.⁶⁷⁰

Measures of poverty and development: Kuwait is one of the 63 richest countries in the world and is defined as a high income economy by the World Bank.⁶⁷¹ However, there are big living-standards differences between Kuwaiti nationals and various segments of its large expatriate community.

Disability spending: N/A

Cluster munitions: country summary

Use period: Coalition forces used cluster munitions during Operation Desert Storm between 17 January and 27 February 1991 in the Gulf War (2 August 1990–March 1991).⁶⁷² In 2003, small parts near the Kuwait-Iraq border were affected by cluster munitions used by coalition forces during the 2003 Iraq war.⁶⁷³

Cluster submunitions used: US-manufactured BLU-61/63/77/86/97, Mk118 (Rockeye), M42/46M77, BL-755 and Beluga.⁶⁷⁴

Number of cluster submunitions used: During Operation Desert Storm at least 50 million cluster submunitions were used on Kuwait and Iraq.⁶⁷⁵

Contamination estimate: The worst affected areas, suspected to contain the most ERW, including cluster munitions, are located in the southern part of Kuwait along the border with Saudi Arabia, in the northwest, and in the northeast of the country along the border with Iraq. From 1991 to 2002, 108 metric tons of cluster submunitions were cleared.⁶⁷⁶ This reduced the long-term impact, but contaminated areas will continue to remain hazardous in the future.⁶⁷⁷

Failure rate estimate: Official failure rates vary from around five to 10 percent. The US General Accounting Office concluded that unexploded submunitions have "created unintended de facto minefields," which have been exacerbated by failure rates that appeared "to have been higher than the 2 to 4 per cent" reported by the Department of Defense previously.⁶⁷⁸ Incorrect delivery, as well as soil conditions, would have resulted in approximately 30 percent failed submunitions and failure rates of up to 40 percent for the Rockeyes.⁶⁷⁹

Number of recorded casualties: Clearance and military accidents accounted for at least 191 casualties as of 1999. At least seven cluster submunitions casualties were recorded between 2000 and May 2006. Due to a lack of updated data collection and insufficient differentiation of war casualties, the exact number of cluster casualties in Kuwait remains unknown.

Estimated casualties: The Kuwaiti Defense Ministry and the US Army's National Ground Intelligence Center indicate that more than 4,000 civilians were killed or injured by cluster submunitions between the end of the Gulf War in 1991 and 1999. At least 1,200 Kuwaiti civilians were killed in the first two years after the war.⁶⁸⁰

Human impact measure

Casualty data analysis

The lack of an updated casualty data mechanism since 2001 and insufficient differentiation of previous data collection efforts results in an absence of publicly available cluster submunitions casualty data.

Until 2001, casualty data collection was the responsibility of the Kuwait Institute for Scientific Research (KISR), but cluster submunitions casualties were not differentiated from other ERW. KISR recorded 1,652 war casualties in Kuwait between 1991 and 1992; it is not known how many were a result of cluster munitions. Between 1991 and 2001, ERW caused 175 (seven percent) of the 2,386 war injuries and 119 (28 percent) of the 421 deaths recorded.⁶⁸¹ According to Kuwaiti medical personnel, approximately 60 percent of those injured by ERW were children under 16.⁶⁸² A drop in casualties had been observed by 1995.⁶⁸³

Since 2000, the media has reported seven cluster submunitions casualties, one killed and six injured. Casualties included three people injured by a BLU-97 and one killed by a Mk118 in 2000.⁶⁸⁴ In 2005, a soldier was injured by a cluster submunition during clearance activity in northwest Kuwait.⁶⁸⁵ On 1 May 2006, a truck transporting cleared cluster and other munitions exploded in Kuwait, injuring two people.⁶⁸⁶

Eighty-four people have been killed and 200 injured during mine/ERW clearance operations in Kuwait.⁶⁸⁷ Of those, 60 were killed and 131 injured during cluster submunitions clearance in the immediate aftermath of the conflict, including 12 Kuwaiti clearance casualties, as well as 66 Egyptian, 41 Pakistani and 41 Bangladeshi casualties.⁶⁸⁸ Submunition accidents during clearance continued to be reported in 2005 and 2006.⁶⁸⁹

Most impacted groups and areas

In the strike and post-strike periods, cluster submunitions reportedly caused casualties in all segments of society. However, nomads in desert areas were and are still exposed to particular danger,⁶⁹⁰ as cluster munitions have shifted under the moving sand and have thus been made invisible.⁶⁹¹ Most casualties occur between March and May, as these are the months for agriculture and herding. Due to harsh environmental conditions, including floods, strong winds, and shifting desert sands, incidents might happen in areas that were previously considered to be mine/ERW free.⁶⁹²

After the strikes, failed cluster submunitions posed a significant danger to the US ground troops and "in some instances, ground movement came to a halt because units were afraid of encountering unexploded ordnance."⁶⁹³

Since mine/ERW contamination hindered land use as well as reconstruction and rehabilitation activities, there were substantial casualties during post-conflict clearance operations. Most casualties occurred during mine clearance, but of all other ERW, cluster submunitions accounted for the most accidents. These accidents were mainly due to lack of expertise or unsafe handling methods.⁶⁹⁴ As of 1999, the government of Kuwait had spent about US\$800 million on 4,000 private clearance contractors alone.⁶⁹⁵

Cluster munitions contamination has a long-term impact on industry and development. The economy of Kuwait is largely dominated by the oil industry. Following the 1991 war, about 749 of the country's 935 oil wells were damaged and many were contaminated with UXO, including cluster munitions.⁶⁹⁶ Oil production dropped from 272,000 metric tons per day before the war to 44,200 metric tons in November 1991 and took several years to recover.⁶⁹⁷ Reportedly, an area of approximately 114 square kilometers, in places covering unexploded ordnance, were covered in crude oil.⁶⁹⁸

The minister of electricity and water affirmed that delays in restoring services were linked to the presence of unexploded cluster submunitions.⁶⁹⁹ In February 2006, two cluster munitions were found during road construction in al-Khabarai and in Gerishan, and there were unofficial reports that cluster munitions were discovered near a military airbase and in an industrial area. Mine/ERW casualties continue to occur in industrial and farm areas in 2005-2006.⁷⁰⁰

Impact conclusion

Cluster munitions have had a high impact on people during the conflict as well as on clearance operators after the conflict. Kuwait's environmental circumstances will make certain areas hazardous in the long term due to cluster submunitions and other mine/ERW contamination.

Capacity to respond

In the aftermath of the conflict, Kuwait was divided into eight zones, each cleared by international forces and afterwards assisted by commercial operators.⁷⁰¹ The Ministry of Defense is responsible for the coordination of demining activities.⁷⁰² There is no risk education in Kuwait. Assistance to casualties and people with disabilities is considered to be adequate, but only Kuwaiti nationals enjoy free medical services. People with disabilities and their families receive support and are entitled to a pension from the Ministry of Social Affairs and Labor.⁷⁰³

Recommendation

- It would be beneficial to set up a retroactive data collection mechanism dealing with all aspects of cluster munitions use and contamination which will allow for analysis of best practices applicable in other cluster submunitions-contaminated countries in the region.

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Key findings

- The average annual cluster munitions casualty rate prior to 2006 was two per year; in the first four months after the July–August 2006 conflict this was two per day.
- Total casualties of cluster munitions reached 587 as of April 2007. In 2006 alone, there were 215 cluster submunitions casualties, almost 10 times more than the total mine/ERW casualties in 2005 (22).⁷⁰⁵
- In 2006, cluster submunitions were used as an area denial mechanism, and are predominantly found in or near residential and livelihood areas. They contaminate approximately 36 percent of the land used for livelihood activities.
- The 2006 contamination, 34 square kilometers, is scheduled to be cleared by the end of 2007.

Country indicators⁷⁰⁶

GDP (purchasing power parity): US\$21.45 billion (2006 est.)

GDP - per capita (PPP): US\$5,500 (2006 est.), decreased from US\$5,837 in 2004.⁷⁰⁷

GDP - composition by sector: (2005 est.)

- *agriculture:* seven percent
- *industry:* 21 percent
- *services:* 72 percent

Labor force - by occupation: 1.5 million and up to 1 million foreign workers (2005 est.)

Unemployment rate: 20 percent (2006 est.)

HDI: 0.774, Lebanon is ranked 78th out of 177 countries in the medium development group. It is ranked much lower than Israel (23) but higher than neighboring Syria (107).⁷⁰⁸

Measures of poverty and development: The Human Poverty Index (HPI-1) value is 9.6. Lebanon is ranked 20th out of 102 developing countries.⁷⁰⁹ However, there are big disparities between regions, with the most cluster submunitions-contaminated areas in southern Lebanon and Bekaa seeing poverty levels between 31.6 percent and 67.2 percent, with farmers living off an average of US\$300 per month prior to the conflict.⁷¹⁰

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by Israel in 1978, 1982, 1996, December 2005,⁷¹¹ and, most recently, between 12 July and 14 August 2006, when the vast majority of cluster munitions was used in the last 72 hours of the conflict.

Cluster submunitions: The most-used types of cluster submunitions prior to 2006 were: BLU-18B/26B/63, Mk118 (Rockeye), M42/43/46. During the 2006 conflict, the types used most were: air-delivered BLU-63 (mostly manufactured in 1973), artillery-delivered M42/46/77, and two types of M85, one with a self-neutralization and self-destruct mechanism and one without.⁷¹² Chinese-manufactured KB-1 submunitions have also been found, but it is unknown who used them.⁷¹³

Number of cluster submunitions used: The full extent of cluster submunitions contamination is unknown, but it is estimated that during the 2006 conflict alone well over 4 million cluster submunitions were delivered. At least 1.159 million M77 submunitions were delivered by 1,800 M26 rockets. Artillery projectiles delivered approximately 2.8 million submunitions. Air-delivered cluster submunitions are not included in these estimates.

Contamination estimate: In the first month after the conflict, “0 % of the villages in the south have been certified as safe for domestic or agricultural use by the United Nations ordnance disposal task force.”⁷¹⁴ As a result of the 2006 conflict, at least 865 strike locations covering approximately 34 square kilometers have been identified, mostly south of the Litani River. Another 138 locations were under investigation as of 19 March 2007 and additional locations are being found on a regular basis.⁷¹⁵ Comparatively, the Landmine Impact Survey (LIS) estimated 137 square kilometers were mine/ERW-contaminated in 2003.⁷¹⁶

The most cluster submunitions-contaminated areas prior to 2006 were West Bekaa and Rashaiyyah qada (districts) in the Bekaa Valley; Nabatiyyah, Marjayoun and Hasbiyyah qada in Nabatiyyah province; and South Lebanon.⁷¹⁷

Failure rate estimate: The official failure rate of the M-series cluster submunitions without self-destruct mechanism is approximately 14 percent, while the failure rate of the BLU-63 is unknown.⁷¹⁸ Reportedly, the M85 submunitions have a failure rate of 0.06 percent in optimal testing conditions.⁷¹⁹

Overlapping footprints, rapid visual clearance, and incomplete surveying make it impossible to determine the exact failure rate of cluster submunitions on the ground. According to the UN Mine Action Coordination Center in South Lebanon (MACC-SL), the overall failure rate could be as high as 40 percent.⁷²⁰ However, it is observed by clearance operators that the failure rate of the BLU-63 submunitions could be as high as 80 to 90 percent. The M-series submunitions would have a failure rate of approximately 25 to 30 percent,⁷²¹ with one producer notably stating failure rates up to 40 percent in the case of Lebanon.⁷²² The newest types of submunitions would have had a failure rate of 10 percent. On the ground, submunitions with self-destruct and self-neutralization mechanisms displayed exactly the same failure rates as those without these mechanisms.

In some cases the failure rate was up to 30 percent.⁷²³

Number of recorded casualties: As of 12 April 2007, at least 587 casualties have been recorded, 338 prior to July 2006 and 249 since that time.

Estimated casualties: Recent casualty data collection is considered to be relatively complete. However, total casualty numbers could be significantly higher as casualty data collection did not exist prior to 1998, most data on conflict casualties (up to 175 of them) is lacking, and there are a significant number of casualties due to unknown ERW. Cluster submunitions survivors constitute 33.5 percent of total recorded ERW survivors. There are 481 survivors from unknown ERW; it would be reasonable to assume that 161 of those were due to cluster munitions.⁷²⁴ This could mean there are at least an additional 336 cluster submunitions casualties.

Additionally, most Hezbollah casualties due to cluster munitions would not have been included in the casualty databases. It seems that a significant number of foreign workers are not included in casualty databases either.

Human impact measure

Casualty data analysis⁷²⁵

Confirmed casualties: 1978–April 2007				
	Total	Strike	Post-strike	Post-conflict
Grand total	587	16	306	265
Injured	462	13	249	200
Killed	125	3	57	65
Unknown status	0	0	0	0
Man	341	3	162	176
Woman	51	4	18	29
Boy	135	2	85	48
Girl	323	5	11	7
Military	24	0	19	5
Deminer	11	0	11	0
Unknown	2	2		0
Dominant activities	Near house (137); livelihood (175)			
Dominant location	Near house (137)			

As of 12 April 2007, at least 587 casualties due to cluster munitions were recorded: 338 predate the 2006 conflict and 249 occurred as of 12 July 2006. At least 125 people were killed and 462 injured. The vast majority of casualties were male at 87 percent (511), 74 were female, and the gender of two children is unknown. Children make up 27.3 percent of total casualties (160, the gender of two is unknown). There were at least 24 military and 11 clearance casualties, among them Belgian, Bosnian and British citizens. Overall, most casualties occurred in Nabatiyyah (127) and Tyre (120); these two qada saw the most casualties in 2006–2007. Prior to 2006, the West Bekaa qada was the most affected, at 61 casualties.

As of 12 April 2007, there are 2,659 records of surviving casualties, 993 due to antipersonnel mines, 212 due to antivehicle mines, 448 due to cluster munitions, 407 due to other ERW, and 481 due to unknown ERW.⁷²⁶ Before 12 July 2006, cluster submunitions casualties constituted 12 percent of recorded casualties, but as of 12 April 2007 they constitute approximately 17 percent of recorded casualties.

In 1999, it was estimated that 60 percent of casualties were due to unexploded ordnance.⁷²⁷ In 2003, the UN peacekeeping force commander described failed cluster submunitions in South Lebanon as the most dangerous type of ERW.⁷²⁸

The IMSMA database at the National Demining Office is the repository of all casualty data but it is unsure if data collected by various actors is synchronized and cross-checked, and there is a lack of coordination and standardization between various data collectors.

Most impacted groups

Lebanon has suffered intermittent conflict with Israel since 1972 and endured civil war between 1975 and 1990. War as such has had a great effect on Lebanon's development. However, cluster munitions use has exacerbated the situation.

Due to political disagreement, no census can be conducted in Lebanon, which results in a lack of reliable statistical data on the demography of Lebanon. Additionally, the winter population of southern Lebanon (as well as several other parts) is significantly less than its summer population, owing to the summer movement of internally displaced people and the influx of the Lebanese Diaspora.

■ Casualties during the conflict

At least 16 casualties occurred during strikes in the 2006 conflict, nine were children. As most people left South Lebanon prior to 10 August 2006, this undoubtedly reduced the number of civilian casualties during the conflict. Prior to 2006, no casualties during strikes were recorded.

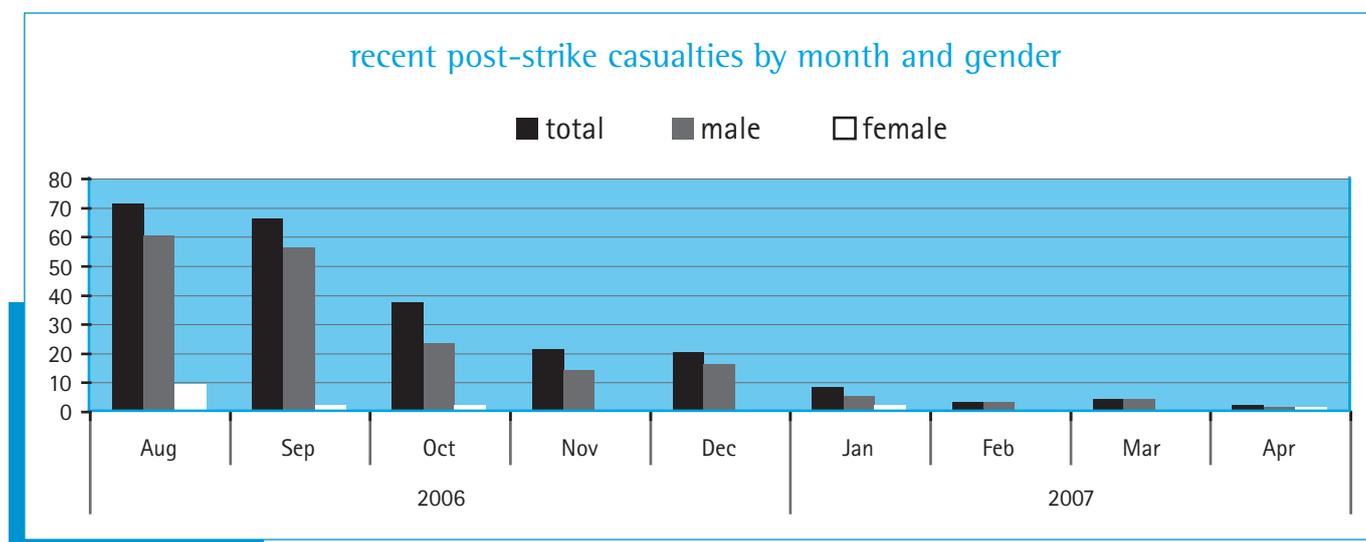
Only two casualties due to an unexploded cluster submunition have been identified during the conflict period: an 11-year-old boy and his father were injured when their motorcycle drove over a failed submunition on the road near Tyre on 11 August 2006.⁷²⁹

These records do not include up to 30 unconfirmed casualties occurring during or shortly after the conflict, nor up to 145 people treated by the UN Interim Force in Lebanon (UNIFIL) or Hezbollah casualties caused during strikes or during clearance activities.⁷³⁰

■ Returnees – internally displaced

In the first month after the 14 August 2006 ceasefire, casualties due to cluster munitions occurred at a rate of three per day. Until the end of 2006, there were on average two casualties per day, and as of January there are on average two casualties per week.

Nearly 1 million people fled southern Lebanon before 10 August 2006. However, approximately 60 to 70 percent returned within a week after the ceasefire. This meant that returnees did not have the time to familiarize themselves with the extent of the contamination. As a result, 79 people or 33.8 percent of cluster submunitions casualties since 15 August 2006 were injured while doing house reconnaissance and 29 were injured just walking in a village. Of the total cluster submunitions casualties where the activity is known, 27.4 percent were in or near a house (137).



Casualties in or near houses regularly occurred when people were trying to move cluster submunitions out of their houses or when they tried to defuse the munitions themselves. The strike location information indicates: "Maifadoun,... These submunitions were collected by a local and placed in a plastic bucket next to a fence. All were supposedly safe or already disarmed. It was found at the bottom of the bucket that several were in fact taped and armed with the striker in the detonator."⁷³¹ Another entry indicates: "Soltaniye, CBU strike area in town between houses. Village heavily affected, large strike area, only roads were cleared by [the Lebanese Armed Forces] (LAF), bomblets between houses, on roofs, everywhere, yesterday accident with self-made clearer, Soltaniye is technically cleared from the urgency problem; however, large areas (constructional land, tobacco plantations, gardens, football field etc.) remain uncleared."

A similar peak in casualties occurred in the emergency post-strike period from mid-1982 to mid-1983, even though cluster munitions use was comparatively limited in 1982.⁷³² Total survivors for that period were 425 (or 16 percent of total survivors). Cluster munitions survivors during that period also accounted for nearly 16 percent of recorded survivors.

The Landmine Impact Survey (LIS) also observed such peaks when the conflict ended with Israeli withdrawal in South Lebanon in 2000, and just after the 1982 Israeli bombing and invasion of the Bekaa Valley and Mount Lebanon.⁷³³ Analysis of pre-July 2006 data also indicates that 17 percent of cluster munitions casualties occurred while doing home reconnaissance just after major cluster munitions use periods. Communities that have emerged most recently from conflict, notably those communities in the South and in the Bekaa Valley, have the largest number of casualties. The size of the contaminated area also influences the casualty rate, but the size of the population in affected communities does not.⁷³⁴

In the long-term, mine/ERW contamination continues to impede the return of displaced people, especially in highly contaminated communities in Nabatiyyah, South Lebanon and Mount Lebanon province.⁷³⁵ According to the LIS, the province of Nabatiyyah had a smaller resident population (200,205 winter population) than estimated beneficiaries of clearance (391,428), as it is a rural agricultural region with a high number of displaced people/refugees working there. Clearance would open up more land for the return of some of the displaced. In general, the displaced population is considered to be poor; approximately 50 percent are living below the poverty line and do not earn enough to cover their expenses.⁷³⁶

This continual internal displacement has resulted in a loss of housing, land, economic stability and

social networks. However, when returning to contaminated areas, many already-displaced families have been displaced once more, as their houses were not livable. The UN noted that this conflict was not a humanitarian crisis but a crisis of protection: "People did not die from poor sanitation, hunger or disease. They died from bombs and shells."⁷³⁷ Due to the high incident and contamination rate of houses and gardens, these were set as priority areas for clearance. However, in mid-March 2007, several houses in Yohmour, a city in Nabatiyyah considered to be very contaminated, had not been cleared of cluster submunitions yet.

Jihad Al Binaa Development Association (JBDA) assessed that 15,813 houses were completely destroyed and 117,824 were partially damaged in southern Lebanon.⁷³⁸ One man in Bint Jbeil said, "Many people are renting houses of people who live abroad or in Beirut, if they can find one, because so many houses and shops are damaged and prices are expensive. Often it is not possible to rent a house and a shop, because the infrastructure is so damaged. Many people live in one room and keep shop in the next."⁷³⁹

■ People carrying out livelihood activities

As a result of the many years of war, hundreds of thousands of internally displaced people live in or around Beirut or other large cities. Older people are left to maintain agricultural activities in rural areas. In summer, the population of the South and other agricultural areas swells with people coming in from the major cities and abroad to harvest fields still in family possession.

The largest group of casualties, 25 killed and 150 injured, occurred while carrying out livelihood activities, predominantly farming and tending animals in both the post-strike and post-conflict periods.

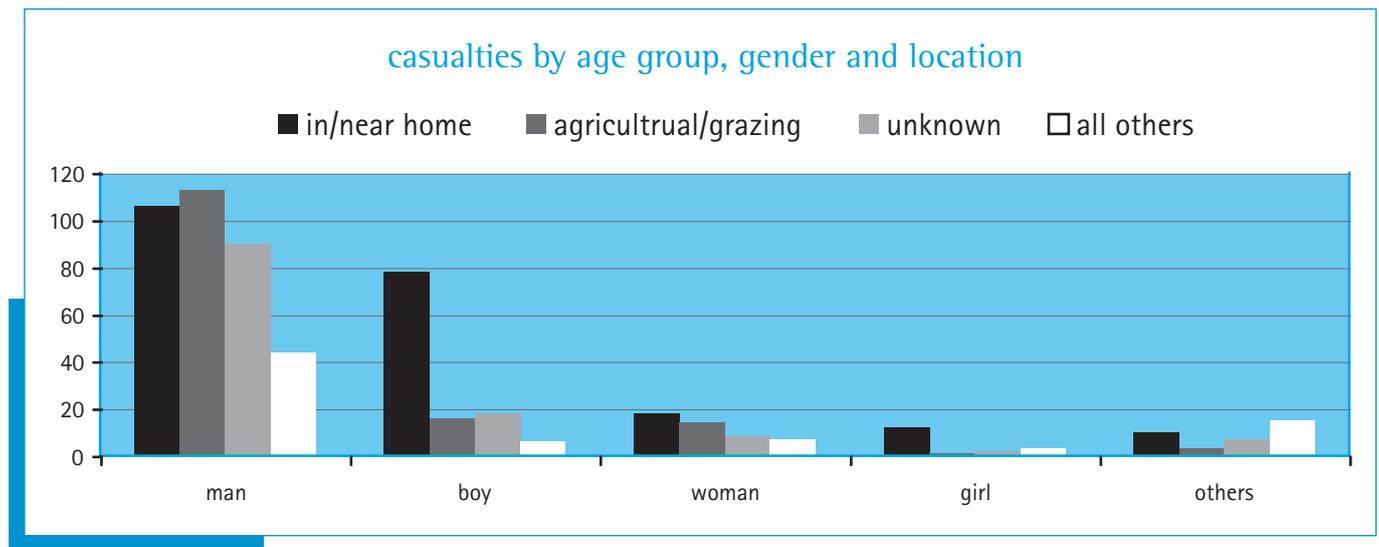
As one of the major agricultural areas, southern Lebanon produces approximately 30 percent of agricultural output. However, agriculture makes up 70 percent of its economy, with approximately 90 percent of the local population depending on it for their livelihood. Most farmers are subsistence farmers, with 95 percent of farmers owning less than four hectares of land. At least 37 percent of farmers use their production for personal consumption.⁷⁴⁰

A total of 88 casualties occurred while farming and 50 while tending animals, 22 of them children and 13 women. Farming casualties in the post-strike phase seem to closely follow crop cycles. Since the 2006 conflict occurred during the tobacco harvesting season, several casualties occurred while trying to salvage the tobacco harvest. Following that (end 2006–early 2007), casualties seemed to occur more in citrus groves. Tobacco and olive crops must be worked starting in March.

Many farmers and shepherds indicated that they needed to go to their fields out of economic necessity. According to the Ministry of Social Affairs, currently more than 70 percent of the rural population in southern Lebanon is unemployed and was in a precarious situation before the conflict, earning between US\$300 and US\$500 per month.⁷⁴¹ Farmers have been attempting to defuse unexploded cluster submunitions on their own, and they have been burning off their fields in an attempt to destroy munitions.

More than 67 percent of 52 casualties provided for analysis by MACC-SL entered the area of the incident on a daily basis, while 11.5 percent entered the area often. Ten casualties occurred less than 500 meters from the village and 40 occurred up to five kilometers from the village.

When looking at activity and location data, dominant locations where cluster submunitions incidents occurred were, firstly, in the village at 44.1 percent (175 of 397 with a known location), in pasture and forest land at 22.7 percent (90) and on agricultural land at 21.7 percent (86); all other locations totaled 11.6 percent.



Shepherds are especially at risk, as pasture lands have not been identified as priority areas for clearance. Even though not as heavily contaminated as agricultural land, pasture land might be covered with more failed cluster submunitions, as CBU-58 dispensing BLU-63 submunitions were used on Hezbollah positions in pasture areas as an area denial mechanism. The older BLU-63s were used on these positions because they are dispensed in larger numbers and can cover a larger surface area. However, they also displayed a failure rate of approximately 80 percent.

In the LIS, the vast majority of contaminated communities (rural and urban) indicated that mines/ERW block access to rain-fed agricultural land (82 percent), pasture land (73 percent) and irrigated agricultural land (30 percent). In contrast, mines/ERW in residential areas created a problem for just six percent of communities.⁷⁴²

The 2006 conflict occurred at the peak harvesting season, reducing the flow to the national market by 75 percent and annual exports by some 15-20 percent (around US\$20-25 million). Overall, the total financial damage to the sub-sector of crop production is estimated at around US\$232 million, of which US\$94.46 million was due to physical damage and loss of harvest in the two governorates of southern Lebanon. Livestock losses are estimated at US\$21.86 million.⁷⁴³

While overall the agricultural sector is expected to bounce back quickly due to the massive clearance effort, the same is not necessarily true for vulnerable rural households, as they appear to constitute major pockets of poverty. Such locations are Bint Jbeil (67 percent in poverty), Marjayoun (60 percent) and Tyre (45 percent).⁷⁴⁴ Loss of income from the 2006 harvest resulted in increased debt for the poorest farmers, as they usually pay back debts during the May-October harvesting period. This could lead to a downward spiral of debt and poverty for Lebanese farmers.⁷⁴⁵

Clearance of the 2006 contamination, carried out by nearly 60 teams on the ground, is scheduled to be completed by January 2008, meaning that people returning home and forced to carry out their daily activities are among the most vulnerable. However, incidents will continue to occur as land is made impact-free, and non-priority areas, such as certain pasture lands, will not be cleared.⁷⁴⁶

■ Women and disabled: a minority risk group at high risk

Women are 31 percent of the agricultural labor force; although they only constitute 21 percent of the permanent salaried labor force, they make up 52 percent of the day laborers not working on family farms.⁷⁴⁷

Although women are only 8.7 percent of cluster munitions casualties (51), 49 of these occurred in the house or during livelihood activities and only two occurred while tampering. This percentage is likely to increase due to the increased level of women-headed households. One-third of the most vulnerable livestock keepers in southern Lebanon hit by the conflict are women; prior to the conflict 14,000 women-headed households lived in poverty there.⁷⁴⁸

■ Children

Children are especially vulnerable, with 94 injured and 66 killed (the gender of two is unknown). Most of the child casualties occurred in the emergency post-conflict period at 60 percent (96), and especially after the 2006 conflict period, which accounted for 45 percent (72) of total child casualties and more than three-quarters of all post-conflict casualties.

Boys (135) accounted for 26.4 percent of all male casualties and 23 percent of total casualties. At 84.4 percent, boys were the vast majority of child casualties. Most child casualties occurred near the house or in the village (63). However, a significant number of child casualties occurred while playing/tampering (35) and carrying out livelihood activities (21).



Woman in contaminated tobacco field in Kfar Sir

At least 2,000 to 3,000 people with disabilities were not covered by humanitarian operations conducted by local and international NGOs.⁷⁴⁹ Approximately 10–15 percent (440–660) war-injured will be permanently disabled; one-third of them are children. In 2006, the number of working-age disabled persons is estimated at 33,923; of these, 27,086 are capable of working but only 7,052 are actually working.⁷⁵⁰ These groups risk falling into the poverty trap as a result of limited resources, weak social protection provided by the state, and decreasing family or community support abilities.⁷⁵¹

■ Foreign workers

The presence of foreign workers in Lebanon is substantial. They are predominantly Palestinian refugees, Syrians, or from the Far East and Africa, many working in unskilled labor. They carry out seasonal or day labor in construction, agriculture, or domestic service. They are often either illiterate or have less than an elementary education and are excluded from social security schemes.⁷⁵²

Only five civilian foreign casualties were recorded: three Syrians, one Palestinian, and one Iraqi. Two Syrians were injured while "collecting junk," one Syrian was injured while shepherding, and the Palestinian was injured "near the house."

Various sources reported that farmers "are paying approximately US\$6.50 per bomblet for "artisanal" bomb disposal in order to resume farming." This task was, according to various sources, carried out by the poorest agricultural laborers including Palestinians "as they will be too desperate not to accept work to clear the fields."⁷⁵³

Clearance records indicate that Palestinians were indeed involved in irregular clearance: "Task was mainly clearance around house major hazard removed prior to [the clearance operator's] arrival by Palestinian self-made EOD man with his sons, unconfirmed reports state 150 up to 270 or even 420 bomblets removed and destroyed, Palestinian charged 100 USD for his services."⁷⁵⁴

Many of these foreign workers are particularly affected as they usually do not benefit from relief services or insurance and usually do not own land. They mostly depend on casual agriculture work. However, due to reduced production in general, Lebanese farmers do not require their labor, leaving the foreign workers in an even more precarious position.⁷⁵⁵

Major areas of impact

The MACC-SL has identified 865 strike areas in southern Lebanon covering 34 square kilometers of land and contaminated by up to 1 million unexploded cluster submunitions; another 138 locations identified as contaminated by the Lebanese Armed Forces (LAF) are under revision.

■ Residential and livelihood areas

The data seem to indicate that a significant number of strikes occurred close to or in villages: "Strike in middle of old town between homes. 4 kids were injured,... at site Blida continuing searching village houses gardens, olive groves," – at least 29 M85 cluster submunitions were found at this site.⁷⁵⁶

The strike area information identifies the type of area contaminated for 586 of 865 strike locations. These contaminated areas broadly fall into three groups: roads (62); houses (100) and residential areas (106); and livelihood land (282). Only four areas were specifically identified as "military" and 20 strikes were on unused land. In most cases where houses are identified as contaminated, gardens and small plots of land used for subsistence farming are also contaminated. Strikes on roads contaminate adjacent land and contamination on agricultural land affects houses on the outskirts of villages. An example from the strike locations list indicates: "Cluster strike

around house on the roof. 1 visible [cluster bomb unit, CBU] on roof + 2 entry holes through roof tiles, Need to check under tiles. CBU in garden around house. Also CBU around Mosque across the road. M42 located beside the house in the garden in olive trees."⁷⁵⁷

It is estimated that 26 percent of cultivated land (16 percent citrus and 10 percent field crops), three percent of olive groves, and seven percent of animal grazing land is contaminated by unexploded cluster submunitions. These totals might be considerably underestimated as they do not include tobacco fields and some other crops.⁷⁵⁸ According to the UN Environment Program (UNEP), agricultural land constitutes 62.4 percent of contaminated land, urban areas 13.4 percent, woodland 12.6 percent, grassland 11.3, and unproductive land (bare rock) constitutes a mere 0.2 percent.⁷⁵⁹

Prior to 2006, two-thirds of communities were highly or medium-impacted, especially in the South and in Nabatiyyah, and usually these communities were close to each other. This indicates that a significant number of people may be greatly affected by the presence of mines/ERW within a limited territory.⁷⁶⁰ Many of the large contaminated areas are made up of cluster munitions strike areas and battlefield sites, of which the exact size and boundaries are difficult to establish.⁷⁶¹ The LIS found that 52 percent of mine/ERW-contaminated land was rural, consisting mainly of small communities where the impact of mines/ERW is thought to be more significant.⁷⁶² Less than one percent of the mined areas in Lebanon are reported to be made up of flat land without any significant vegetation cover. Rain-fed cropland was the most frequently blocked resource type, blocked pasture land was second most common, followed by non-agricultural land (forest), and then irrigated crop land.⁷⁶³ The LIS states, "the results of the impact survey plainly indicate that Lebanon still suffers adversely from the presence of landmines and UXO, especially in its southern provinces and Mount Lebanon. Clearly, the extensive contamination that exists in Lebanon's crop and pasture land will pose a hazard for many years to come."⁷⁶⁴

While not featuring prominently in the strike locations in southern Lebanon, infrastructure damage was significant, damaging transport, electricity, telecommunications, water, nutrition, health and education. At least 137 roads have been damaged and 107 bridges and overpasses have been damaged or destroyed. The Council for Development and Reconstruction estimated the total cost of restoring the infrastructure destroyed at US\$3.6 billion.⁷⁶⁵

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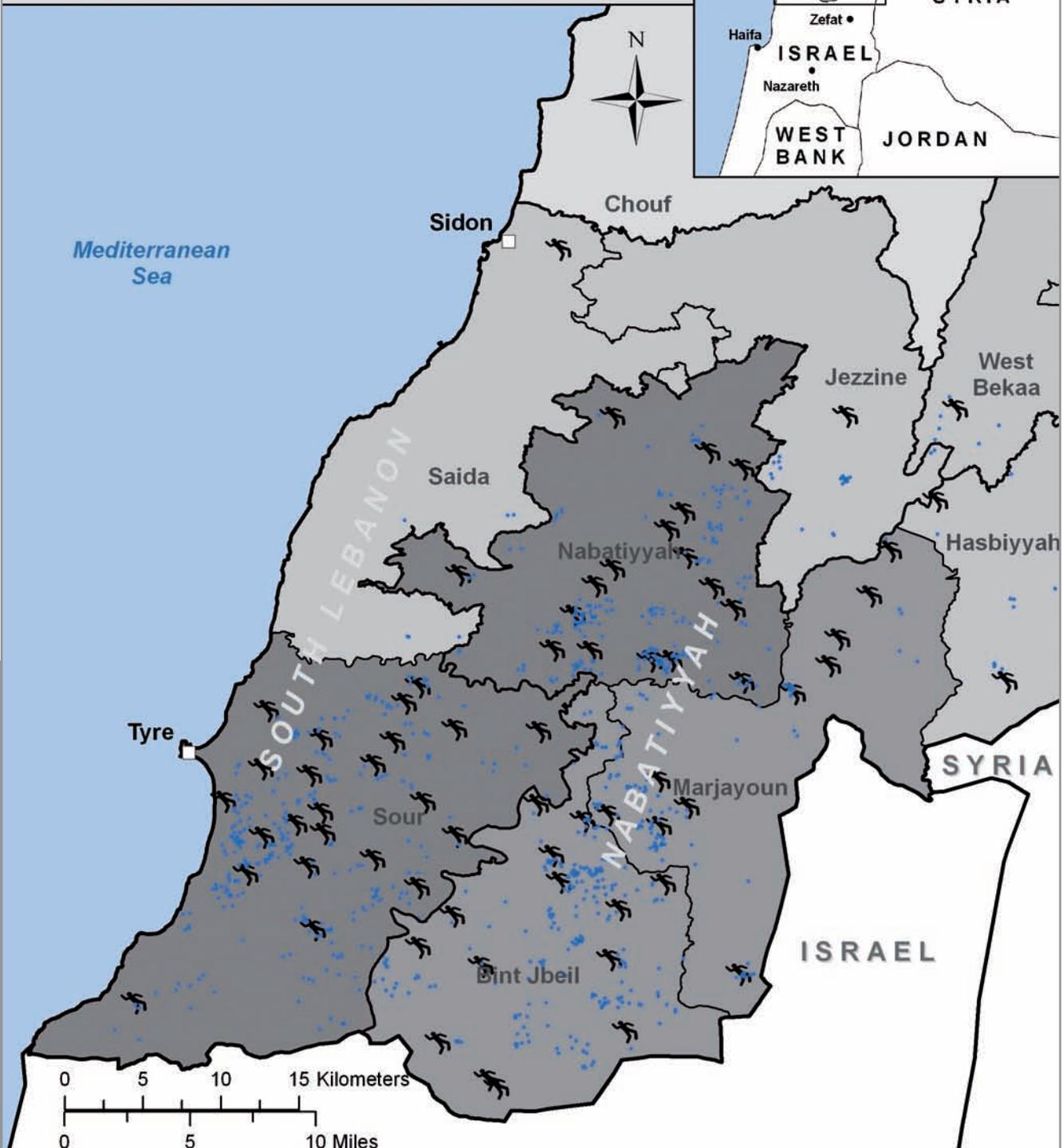
Cluster munitions and casualties per qada (district) in southern Lebanon

Legend

- | | |
|---|--|
|  Country boundary | Casualties per qada (district) |
|  Mohafaza (governorate) boundary |  No casualties reported |
|  Major city |  1 - 25 casualties |
|  Cluster munitions strike |  26 - 50 casualties |
|  Casualty |  51 - 78 casualties |

Boundary representation is not authoritative
 Cluster munitions used by Israel in 2006
 Cluster submunitions casualties from 15 August 2006 to 12 April 2007

1/04/2007



■ Cluster munitions and human security

Cluster submunitions casualties generally tend to be poor, relatively uneducated persons involved in farming activities, a situation most acute for the displaced. Among total mine/ERW survivors, 77 percent had not completed secondary education and 50 percent were illiterate or never passed primary education. Of the children who became casualties, only 20 percent continued to higher education.⁷⁶⁶ The Lebanon agricultural survey indicates that 16 percent of farmers are illiterate and 61 percent of them have not received education beyond primary education.⁷⁶⁷

There is a link between education and income levels and the incidence of casualties, with those having the lowest education and income being the most vulnerable, both in terms of locations where casualties occur and in terms of activities leading to casualties. At least 52 percent of cluster munitions survivors live on a monthly income that is less than 500,000 Lebanese Lira (LL - approximately US\$330) and only two percent live on an income that is higher than 1 million LL (approximately US\$660). Of total survivors where the monthly family income before and after the injury is known, 68 percent live on less than 500,000 LL per month. Unemployment increases after the incident, especially among the poorest and professions where mobility is needed.

The areas most hit by cluster munitions – South Lebanon, Nabatiyyah and West Bekaa – are among the poorest in the country and “the large overlap of the geography of poverty and the geography of destruction” requires special reconstruction programs to build local capacity for poverty alleviation and job creation.⁷⁶⁸ Approximately 73 percent of unexploded cluster submunitions strike areas were identified in the southern qada where the average poverty is over 41 percent (the national average level is 32 percent).⁷⁶⁹

■ Tourism

Prior to the Israeli offensive, the economy of Lebanon was recovering quickly with an expected six percent GDP growth for 2006. The tourism industry accounts for approximately 10 to 12 percent of GDP and was to see a significant increase in tourists for 2006. An estimated 1.6 million tourists were expected to visit Lebanon by the end of 2006, resulting in approximately US\$2 billion in revenues from the tourism industry alone.⁷⁷⁰ There were direct losses in war-affected areas in southern Lebanon. The majority of the businesses that were hit directly in these areas were small businesses. However, indirect losses included, the war has led to job losses for approximately 30,000 people working in the sector due to cancellations and a projected three-year setback for the sector as a whole.⁷⁷¹ In the first quarter of 2007, tourism bookings are 70 percent lower than the same period in 2006, and it is expected that it will take two years to reach the 2006 levels.⁷⁷²

Impact score

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives		✓	
2 Impact on resources		✓	
3 Impact on public sector		✓	
ST SUBTOTAL		6	
T TOTAL			6

Impact conclusion

The 2006 use of cluster munitions has added greatly to a significant existing mine/ERW problem. Cluster munitions have almost solely affected residential and livelihood areas in the South and Nabatiyyah. Many of the affected areas are places where people need to go on a daily basis. This results in a high-risk emergency period that can only be mitigated by the considerable clearance effort. Until the clearance is complete, these and older cluster submunitions will prevent people from resuming their livelihoods in a safe way, and will stifle economic activity in the urban centers of the affected communities.

There is a large overlap between most cluster submunitions-affected areas and the poorest areas of Lebanon, especially in southern Lebanon. This has exacerbated social inequality within Lebanon and it is crucial that people can return to profitable livelihood activities as soon as possible.

The 2006 contamination set back a fragile economy recovering from decades of war, causing more than US\$3 billion in infrastructure damage, several billions in revenue loss from the tourism and agriculture sectors, and exacerbating internal political tensions in Lebanon.⁷⁷³

Capacity to respond

The Ministry of Defense is responsible for mine action and the National Demining Office (NDO, part of the LAF) is in charge of implementing the mine action strategy, including victim assistance and MRE, which are both dealt with in separate coordination committees; it receives technical support from the UNDP. In southern Lebanon, mine action is coordinated by MACC-SL, which is also in charge of post-August 2006 clearance tasking. Prior to the 2006 conflict, mine action was carried out under the End-State Strategy for Mine Action and integrated into the broader development of Lebanon. Clearance operations in 2007 are carried out by nearly 60 teams from the UN, the UN Interim Force in Lebanon, international NGOs, and the LAF Engineering Regiment.

MRE is implemented by the organizations in the MRE committee, which includes members of international NGOs, UNICEF, NDO and relevant ministries. In the aftermath of the 2006 conflict, new NGOs have started conducting MRE, but coordination and coverage of all high-risk groups seems to be lacking.⁷⁷⁴

Victim assistance is coordinated by a committee under NDO supervision. For people with insurance most basic services are free, but it does not cover all aspects and assistance facilities are less developed in southern Lebanon and the Bekaa Valley. During and after the 2006 conflict, the health infrastructure was stretched to its limits but was largely sufficient. In the post-strike period, most victim assistance services are carried out by non-governmental operators and do not cover additional costs such as transport to and lodging at services.⁷⁷⁵

Recommendations

- Unify and standardize data collection and disseminate it transparently for research, planning and implementation purposes.
- Assess and address socio-economic needs within a long-term development process.
- Continue to adjust clearance priorities.

Community experience⁷⁷⁶

Mohammed is an 11-year-old Palestinian refugee. He lives in the Rashdiyyah refugee camp near the southern Lebanese port city of Tyre. He lost both legs in a cluster submunitions incident on 11 August 2006. He was sitting behind his father on a motorbike when they drove over the failed submunition near Ras al-Ain, north of the Rashdiyyah camp.



© Laura Bouschnak

Mohammed's parents are illiterate; his father is unemployed and his mother works as a cleaning lady. However, lately it has been difficult for her to find jobs, as she has to stay with Mohammed and accompany him to physiotherapy sessions or assist him with his daily needs. The family does not have a stable income.

Mohammed has to go through six operations in order to be able to wear two prosthetic legs. However, so far he has not been able to have the operations because he will need to go to Saida and stay for a week in preparation for the care he needs. His mother will need to stay with him the entire time, and the family cannot afford this. In the meantime, Mohammed is receiving physiotherapy services for free, but the organization assisting him does not pay for other expenses such as transportation and medicines. Mohammed tries to avoid the physiotherapy, which he says is painful.

Mohammed does not like to go to school anymore and skips classes most of the time. He is in fourth grade but still cannot read or write. At school, his classmates always try to push his wheelchair, which makes him very uncomfortable. Mohammed spends most of his time with his best friend Essam, 15, who left school at the age of 12 and helps his father working at a shop. Many children are forced to leave schools early to help their parents because of the economic crisis. When there are no power cuts, Mohammed likes to play video games and take photographs, which he learnt via a project which allows youngsters between seven and 12 in refugee camps to take pictures of daily life using disposable cameras. Mohammed dreams of becoming a photographer later.

Mohammed's father was also injured in the incident, with burns to his back and legs. He walks using sticks.

Community experience

Hussein Qasir, deputy mukhtar (mayor) of Deir Qanoun al-Nahr municipality:

Deir Qanoun al-Nahr municipality, located 12 kilometers from Tyre, has a winter population of 8,000 and a summer population of 10,000. Agriculture constitutes about 75 percent of the municipality's income. As a result of the July conflict, 106 houses were totally destroyed and 750 houses were slightly damaged. In comparison with the areas surrounding the village, Deir Qanoun el Nahr was very affected by cluster munitions. Citrus and olive trees were especially severely damaged and the economic situation has deteriorated considerably. Damages to the agricultural sector were registered, but compensations have not been paid yet. The municipality is looking for alternative incomes to deal with the crisis in the agricultural sector. Therefore it is trying to obtain resources for a tailoring workspace as part of a women's empowerment and employment project.⁷⁷⁷

Community experience⁷⁷⁸

Tyre, 16 March 2007: Ghazi, his two brothers and father grow vegetables on 100 dunum (100,000 square meters) of land. Four families live off the land, which was contaminated with cluster munitions on the 33rd day of the conflict. There were failed cluster submunitions everywhere in the fields, the house, and the stable.

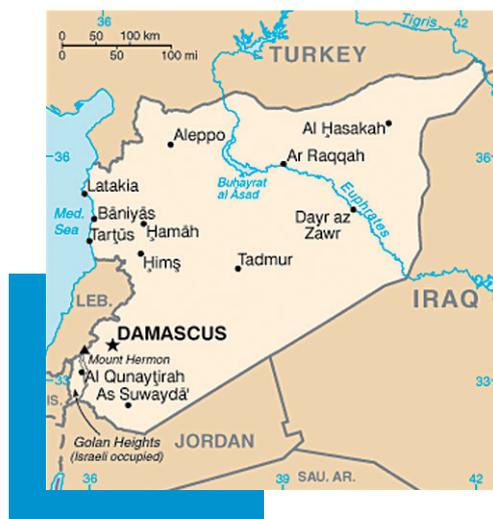
As a result, the entire summer harvest was lost and production is now only 50 percent of what it used to be. In the beginning, some young men were clearing, but soon international clearance teams took over the work. The family was not able to use the land for five months. Even now only 40 dunum of land can be used, which is a problem as the families only own 25 of the 100 dunum and need to pay rent for the rest. However, they prefer keeping the land even if it cannot be used, as prices for cleared land are much higher. The owner of the land might increase the rent if they were to give up their land. This year the family will farm the cleared land, and hopes to be able to use as much of the seeds and materials as possible which were already bought for use on the entire land. Normally the family works with at least five day laborers, mostly Syrians and Palestinians, but has not been able to provide any of them with work since the end of the conflict.

Despite reduced produce on the market, products cannot be sold at a higher price due to large imports from abroad. Ghazi and his family estimate the total loss to their produce at US\$25,000.

- The bomb fell on me when I was picking grapes, it was hanging by its ribbon in the leaves and I didn't see it.
- The bombs have become invisible now that the tobacco is growing.
- I cannot sell my oranges, people think they are poisonous because of the cluster munitions.
- We were walking in the village and kicked some rubble, a bomb exploded.
- I know where the bombs are, I step next to them to go into my field.
- The commercial center is completely destroyed. I used to employ 120 people, but now I can only pay 30.
- We do not know when the cluster munitions fell, we left and when we came back the contamination was everywhere.
- Last year's harvest was lost and if our land does not get cleared soon we will not have a harvest this year either.



SYRIA



Key finding

- A cluster submunition incident was reported in early 2007 involving at least four children.

Country indicators⁷⁷⁹

GDP (purchasing power parity): US\$75.1 billion (2006 est.)

GDP - per capita (PPP): US\$4,000 (2006 est.)

GDP - composition by sector: (2005 est.)

- *agriculture:* 24 percent
- *industry:* 18 percent
- *services:* 58 percent

Labor force - by occupation: 5.505 million (2006 est.)

- *agriculture:* 26 percent
- *industry:* 14 percent
- *services:* 60 percent (2003 est.)

Unemployment rate: 12.5 percent (2005 est.)

HDI: 0.716, Syria is ranked 107th out of 177 countries in the medium human development group, lower than most of its neighbors.⁷⁸⁰

Measures of poverty and development: The Human Poverty Index (HPI-1) value for Syria is 14.4 and is ranked 29th out of 102. This value is relatively high considering it has one of the lowest GDP per capita of the Middle East and approximately 11.9 percent of its population is living below the poverty line.

Disability spending: N/A

Cluster munitions: country summary

Use period: Cluster munitions were used by the Israeli Defense Force (IDF) in the Golan Heights during the Arab-Israeli conflict between October 1973 and May 1974.

Cluster submunitions used: It is reported that Mk118 (Rockeye),⁷⁸¹ BLU-26 and BLU-63 submunitions were used.⁷⁸²

Contamination estimate: Cluster munitions contamination remains significant in the Golan Heights (Qunaytra governorate) and ERW in general would seem to cause more casualties than mines.⁷⁸³ Reportedly, cluster munitions were also used against non-state armed groups' training camps near Damascus.⁷⁸⁴

Failure rate estimate: The official failure rate of Mk118 submunitions is reported to be under five percent, but the operational failure rate is higher. The test-condition failure rate of the BLU-26 is at least 26 percent; that of BLU-63 submunitions is unknown.

Number of recorded casualties: At least five casualties have been recorded as of 2007. Due to the poor casualty data collection, the total number of cluster munitions casualties remains unknown.

Estimated casualties: N/A. There is no publicly available data collection mechanism. As a result the number of casualties of cluster submunitions, as well as those from mines and other ERW, is unknown. Nevertheless, civilian casualties due to mines/ERW occur regularly and, in 2005-2006, an overall casualty increase has been registered in the Golan area.⁷⁸⁵

Human impact measure

Casualty data analysis

One incident, resulting in at least one Austrian medic of the international peacekeeping force killed, was attributed to a cluster submunition having come loose from a hillside in the Golan Heights area due to melting snow.⁷⁸⁶

In the beginning of 2007, four children were injured while playing with a 'guava', or a BLU-26 submunition. Similar incidents with devices that can be activated by rolling or kicking them have been reported, but they are not recorded as cluster submunitions incidents.⁷⁸⁷

Most impacted groups and areas

The lack of casualty data impedes analysis of the human impact of cluster munitions. However, recent mine/ERW casualties seem to suggest that herders, children playing, and women collecting firewood or herbs are most at risk.⁷⁸⁸ In addition, people are at risk in areas which were formerly closed to the population but are now reopened. Internally displaced people returning to government-reconstructed villages also engage in risk-taking behavior. Children would not only play with ERW, but also tamper with them for recycling purposes.⁷⁸⁹

Mines and ERW in the Syrian-controlled part of the Golan Heights impede access to and development of the fertile agricultural land and tourism and prevent access to water resources.⁷⁹⁰

Impact conclusion

Although the full scope of the human impact of cluster submunitions is unknown, mines and especially unmarked ERW remain a danger for the local population and constitute an obstacle to development.

Capacity to respond

The United Nations Disengagement Observer Force (UNDOF) set up a minefield security and maintenance program identifying and marking all minefields in the buffer zone. UNDOF also carries out operational demining, provides medical assistance to casualties, and supports MRE programs carried out by UNICEF. Health care in Qunaytra governorate is basic, and the nearest comprehensive assistance is in Damascus.⁷⁹¹

Recommendations

- It is recommended to set up an injury surveillance mechanism specifying cause of injury, including mine/ERW casualties, and to make this information publicly available.
- Clearance efforts would immediately reduce the risk posed by unmarked ERW.

WESTERN SAHARA/MOROCCO



Key findings

- Confirmed contaminated areas cover the east of the berm in the northern sector around Tifariti and Bir Lahlou.
- There were at least four casualties from cluster submunitions in Western Sahara.

Area indicators⁷⁹²

GDP (purchasing power parity): N/A

GDP - per capita (PPP): N/A

GDP - composition by sector:

- *agriculture:* N/A
- *industry:* N/A
- *services:* 40 percent

Unemployment rate: N/A

HDI: N/A

Measures of poverty and development:

Approximately 200,000 Saharawis fled their homes in 1975 to seek refuge in Algeria; this long-term refugee population lives in harsh conditions and depends largely on external aid. The Polisario-controlled parts of the Western Sahara have no resident population, but nomads herding camels move through the area.⁷⁹³ Although there are no official economic figures for the Western Sahara, incomes are reportedly lower than in Morocco.

Disability spending: N/A

Cluster munitions: area summary

Use period: Cluster munitions were used between 1975 and 1991 by the Royal Moroccan Army during a conflict engaging Morocco, Mauritania (which withdrew in 1979), and the Polisario Front for sovereignty over the territory of the Western Sahara.

Cluster submunitions used: Submunitions used include M42/46⁷⁹⁴ BLU-63A/B and Mk118 (Rockeye).⁷⁹⁵ MINURSO also reports BLU-61 submunitions.⁷⁹⁶

Contamination estimate: The full extent of contamination due to cluster munitions strikes in the Western Sahara is unknown, but both Landmine Action-UK (LMA-UK) and the UN Mission for the Referendum in Western Sahara (MINURSO) report the presence of scattered submunitions.⁷⁹⁷ It is estimated that the most mine/ERW-contaminated zones are in the east of the berm (earthen walls built as an approximately 2,700 kilometer-long defensive structure), namely in the areas of Mehaires, Tifariti and Bir Lahlou.⁷⁹⁸ LMA-UK is currently conducting survey operations and reported that cluster munitions seem to be dispersed. As of April 2007, confirmed contaminated areas cover the east of the berm in the Northern Sector around Tifariti and Bir Lahlou, especially in a 10 kilometer-radius around Tifariti and a wide area on the north and northeast of the Polisario-controlled Northern Sector.⁷⁹⁹ MINURSO noted that LMA-UK has surveyed 254 areas and marked 78 as dangerous, while 112 more were marked for spot tasks.⁸⁰⁰

Failure rate estimate: The official failure rate of M-series submunitions is approximately three to 14 percent, Rockeyes see two percent failure rates under test conditions, and the failure rate of the BLU-63 is unknown. However, it has been reported that entire M483A1 dispensers full of unexploded submunitions have been found. In some cases, several dispensers were found with unexploded bomblets dispersed over a wide area without any proof of explosion.⁸⁰¹

Number of recorded casualties: At least four casualties have been recorded.

Estimated casualties: There is no comprehensive data collection mechanism. However, LMA-UK is reportedly planning to set up a casualty database containing planning and follow-up information⁸⁰² as a permanent resource for victim assistance issues.⁸⁰³

Human impact measure

Casualty data analysis

There is no systematic data collection mechanism in the Western Sahara; as a result, data on cluster submunitions casualties is fragmented. In 1998, one cluster submunitions incident caused two fatal casualties.⁸⁰⁴ On 19 February 2007, two brothers activated a BLU-63 submunition in Mehiers (the northern sector of the Western Sahara). As a result one child died from internal bleeding and the other suffered external injuries.⁸⁰⁵ MINURSO patrols report seeing ERW on an almost daily basis.⁸⁰⁶

MINURSO recorded two cluster submunitions incidents out of a total of 39 mine and ERW incidents between 1992 and 2000. The number of casualties as a result of these two submunitions incidents is not known.⁸⁰⁷

A general increase in mine/ERW casualties has been reported, with five incidents in the first three months of 2007 already, more than MINURSO recorded for the whole of 2006.⁸⁰⁸

Most impacted groups and areas

Mines and ERW pose a specific threat to nomads, who live on both sides and tend camels in the Western Sahara on both sides of the berm. People trying to reach the Spanish enclave of Ceuta via the Western Sahara are also at risk. Contamination could hinder the future return of refugees from Algeria.⁸⁰⁹ Mines and ERW sliding under the sand also pose a danger to MINURSO and other troops patrolling Western Sahara.⁸¹⁰

MINURSO observes that mines/ERW also restrict the limited farming going on in the Western Sahara, as well as infrastructure development. As a result of increased incidents, the Moroccan army has started clearance on the Moroccan-controlled side of the berm.⁸¹¹

Impact conclusion

The extent of the human impact of cluster submunitions in Western Sahara is unknown, but there are indicators that significant contamination impedes human movement and development.

Capacity to respond

There is no formal structure responsible for mine action in Western Sahara, but MINURSO's mandate includes identifying and marking ERW, updating a general database and destroying or fencing ERW close to the berm. Those operations are carried out jointly with the Royal Moroccan Army and Polisario forces.⁸¹²

LMA-UK has been carrying out an ERW survey/clearance program since August 2006,⁸¹³ mapping hazardous areas, destroying ordnance, and setting up an Information Management System. Risk education is organized sporadically by the Saharawi Campaign to Ban Landmines. Access to basic health care is limited; rehabilitation structures and other victim assistance services are deemed to be insufficient.⁸¹⁴

Recommendation

- Use the LMA-UK assessment as a basis for sustained data collection and planning.

Conclusion

Landmines have long been recognized internationally as indiscriminate weapons of war. The impact of their use in human and socio-economic terms has received considerable attention, generated studies, contributed to policies and, in the end, led to one of the most successful international instruments and a process for monitoring states' compliance with their Mine Ban Treaty commitments.

The use of cluster munitions creates very similar problems in terms of indiscriminate, persistent, and disproportionate harm to civilians in the short and long terms. There is no doubt that cluster munitions leave one of the most problematic and impacting legacies of warfare today due to their fatal "footprint": the wide area they are designed to cover, their high failure rates, and their sensitive nature as ERW. Casualty data and reports demonstrate what military sources have long known: cluster submunitions-contaminated areas are often "*de facto* minefields."

Cluster munitions are designed to kill and maim. Failed cluster submunitions cause more casualties per incident and subsequent injuries are as severe or even more disabling than landmine injuries. Cluster submunitions are prone to detonation during normal livelihood activities. The sensitivity of some submunitions is so extreme that detonations causing casualties have been reported from the vibrations of cars, animals, bicycles or even people on foot simply passing by. Often, casualties occur merely in the vicinity of an explosion, creating a specific and recognizable pattern of civilian harm. Failure rates are dependent on numerous environmental conditions which are not in the control of users. In reality, this makes submunitions failure rates inevitably higher, contamination worse, and thus the human impact greater than assumed based on manufacturers' estimates.

Circle of Impact: The Fatal Footprint of Cluster Munitions on People and Communities, reconfirms that civilians are almost the sole victims of cluster munitions at 98 percent of casualties. The vast majority of cluster submunitions casualties confirmed by this report were among the poor in their country, area or region, and often among the poorest. This report has gathered extensive information from numerous sources from both

previously and newly reported data. Statistical evidence of at least 13,306 recorded and confirmed cluster submunitions casualties was compiled. This does not include extrapolations or estimates. A conservative estimate indicates that there are at least 55,000 cluster submunitions casualties but this figure could be as high as 100,000 cluster submunitions casualties.

During the course of the research, one previously unreported area with cluster submunitions casualties was identified – Nagorno-Karabakh. Cluster munitions use and/or contamination was also confirmed in eight additional countries. While casualties in several of these countries are suspected, they are not included in the totals due to a lack of cross-checking information. Significant numbers of additional casualties were identified in high-use countries, including significant numbers in Lebanon, Serbia and Vietnam.

Examination of detailed casualties consistently linked to particular livelihood activities and locations shows that cluster munitions use results in significant socio-economic impact. Considering the lack of rapid and comprehensive clearance vital to reducing civilian casualties, and the insufficient risk reduction specific to cluster munitions, the use of these weapons has created needs for survivors, their families and communities which have yet to be adequately addressed.

There is also evidence that a high percentage of casualties due to unknown ERW in areas which are known to be contaminated with failed cluster submunitions are, in fact, cluster submunitions casualties. In the countries which experienced the greatest use, the number of cluster submunitions casualties among those where the device that caused the incident is unknown is at least equivalent to the rate of cluster submunitions casualties where the device is known. In many cases, this would mean that cluster submunitions casualties make up 40 to 50 percent of casualties where the device is not known. Many more exhibit the typical injury and activity signatures caused by cluster submunitions.

The persistence of inadequate data collection and dissemination in the public domain concerning strikes, subsequent contamination, and casualties remains. As a result:

- Exactly how many cluster submunitions lie dormant, no one can say.
- Exactly how many cluster submunitions casualties there are, no one can say either.

Despite limited data, a few lessons can be drawn from the overwhelming similarities exhibited by various countries affected by cluster munitions, which will continue to pose a significant, lasting, and indiscriminate threat.

Lesson 1: Accurate, timely, transparent data and analysis is the key to effective humanitarian action for impacted communities

Analysis shows that only 12 percent of cluster munitions-affected countries or areas (three) have near-complete data collection, 64 percent (16) have limited or episodic data collection and 20 percent (five) have no data collection system. Only 16 percent (four) possessed or shared data on conflict casualties and 44 percent (11) differentiated to some extent between cluster submunitions and other ERW. An overwhelming majority, i.e., 96.8 percent of all confirmed submunitions casualties (12,886) occurred where there is limited or no data collection.

In most cases, the nature of conflict and its immediate aftermath have hindered effective data collection, and complete information on cluster submunitions casualties for the three stages (strike, post-strike, and post-conflict) at which cluster munitions pose a threat is unobtainable. Unless reported in the media, limited information is available about casualties during strikes, as is the case for Chechnya. From existing data, it is often impossible to ascertain whether a casualty occurred during a strike or due to a failed submunition shortly after. Little effort is undertaken to improve information on strike and post-strike casualties retroactively. Even in countries where data collection is considered relatively complete, information about casualties during strikes is scarce and post-strike casualties are underreported. However, when looking at two high-use cases – in Iraq where limited media analysis identified more than 1,000 strike casualties in 2003, and in Lao PDR where more than 4,000 casualties due to failed munitions were recorded – a chilling picture of the potential scope of the impact appears.

Similarly, not only are all casualties (such as internally displaced people or refugees) not recorded, but insurgent, militant, and military casualties are also not included in many databases. Sometimes this information is recorded but not

made publicly available, possibly to downplay the impact of cluster munitions on the user's own troops.

While the military casualty figures are doubtless significantly underreported, civilian casualties were found to be vastly underreported in most high-use locations, namely Afghanistan, Cambodia, Chechnya, Iraq, Lao PDR and Vietnam.

Additional issues impacting data collection are: many casualties or their communities do not know exactly what type of device caused the incident; data collectors might not have the expertise to deduce this type of information; and casualty databases or injury surveillance mechanisms are not linked to strike or mine-use data. Consequently, a large percentage of casualties are recorded as caused by an unknown device or an erroneous device is indicated. Most of these issues can be addressed with increased training, resources, and prioritization.

While this lack of information directly affects the ability of survivor assistance providers to operate effectively, other actors' work is likewise inhibited by this lack of information. Casualty data collection and reporting is not only relevant to the humanitarian mine action sector for clearance, MRE, and survivor assistance providers, but to international, national and local development, poverty reduction, and disability actors as well. However, there is little evidence that these activities are being linked to mine/ERW casualty data. While in Afghanistan, Cambodia and Lao PDR it is generally recognized that poverty reduction, community development, and infrastructure projects should include clearance of contaminated areas, there do not yet appear to be strong and coordinated efforts between these activities, casualty data collectors, and survivor assistance providers.

Differentiation of device types causing casualties, including cluster submunitions, is necessary to fine-tune survivor assistance and community development projects. In areas where there are many cluster submunitions casualties there tend to be trends in the type and level of disability. For example, there is a high rate of partial or total blindness and hand or arm amputations among cluster submunitions survivors, which makes many types of vocational training problematic at best. Although this is also true of other ERW types whose "injury signature" corresponds with that of cluster submunitions, in most countries the bulk of ERW casualties are not caused by these other ERW device types but are mainly caused by cluster submunitions.

Lesson 2: Targeting practices and subsequent contamination of civilian areas causes disproportionate and persistent harm to communities

While it is not within the scope of the current study to conduct an extensive and/or exhaustive analysis of strike data, initial analysis of the available data was carried out for the purpose of placing the cluster munitions impact on communities in context. The project performed initial analysis of (partial) strike or contamination data obtained over a 42-year period for nine countries, confirming the use of at least 440 million cluster munitions. Estimating failure rates between five and 30 percent on average, to date 22 million to 132 million would have become ERW. Given recent failure-rate estimates of the ageing US cluster munitions used by Israel in Lebanon, and the known failure rate of the most prolifically dispensed submunition in history, the BLU-26, these estimates are unquestionably conservative: they represent the *minimum number of cluster submunitions dispensed* since 1965.

Another feature of the strike data is patterns in use over time. Cluster submunitions, a large area weapon that generally causes human casualties within each footprint while creating little infrastructure damage, seem to have been used instead of ground forces in Southeast Asia, Iraq, Kosovo, and Lebanon. Analysis of available data indicates that near the end of conflict, cluster submunitions use increases as a tool to increase troop mobility and/or withdrawal. As the US began the withdrawal of its combat troops from Vietnam, the use of cluster munitions escalated not only in that country, but in Lao PDR and Cambodia as well: between 1970 and 1975, 74 percent of all cluster submunitions (at least 326 million) were dispensed, with 39 percent (at least 172 million) dispensed in 1970 alone. In Kosovo, cluster munitions were used by NATO without the deployment of any NATO ground forces. This seems to have been the case in Afghanistan and Iraq as well. Most recently, the widely publicized, documented, and internationally condemned example of Israeli cluster munitions use in the last 72 hours of the conflict with Lebanon, when up to 90 percent (approximately 4 million) of the cluster submunitions in that conflict were used, is linked directly to the Israeli forces' movement.

Cluster munitions were used on a wide range of locations, from built-up urban areas to more sparsely-populated rural environments, often against unknown, non-specific, hidden, and moving targets. In many cases, cluster munitions were not used against regular standing armies but against irregular forces, which by their very nature are very difficult to target and are often near civilian locations. In some cases, such as Chechnya, they explicitly targeted civilian targets.

Cluster munitions are wide-surface weapons contaminating more than the military target. This was overwhelmingly evident in most affected countries, from Southeast Asia to Europe.

This has resulted in the most problematic characteristic of the strike data observed, i.e. the level of cluster munitions use within populated areas or their immediate surroundings – within the “circle of life” mentioned in the introduction to this report. The use of cluster munitions in civilian areas results in civilian casualties, and does so in a manner disproportionate to the supposed military objective. Even limited information on casualties during strikes indicates that many cluster submunitions casualties were civilians, as was the case in Iraq.

The body of evidence on the targeting of cluster munitions (or the lack thereof) is clear. In Lao PDR and Cambodia, for example, 20.1 percent of the cluster munitions (59.2 million – more than were used in Iraq in total) were dispensed within a one-kilometer radius of the villages. In Afghanistan, seven of the 10 highest population centers recorded the highest number of cluster munitions strikes in 2001-2002. Cluster munitions strikes were also made in highly populated civilian areas of Croatia, Chechnya, and Serbia.

Use in or near civilian areas produces contamination in locations where people live and work. Use in livelihood areas adjacent to human habitation leads to even higher failure rates and greater contamination owing to the soil conditions and ground cover in terrain such as farmland, crops, fields, rice paddies, orchards, forests and jungle. In Lebanon, nearly half of the strike locations were identified as livelihood areas such as farmland and orchards. An additional 35 percent were located within houses and residential areas. People in contaminated areas of Serbia have “almost daily encounters” with unexploded submunitions in areas of livelihood activity near villages, including areas that used to be corn fields, woods, and pastures.

Even when cluster munitions are used on sparsely populated areas, they still pose a danger to people tending animals or to those who need to supplement their living by collecting food and wood from forests, as was the case in Albania.

Overall, the impact of cluster munitions use on civilians in each country or region is generally proportional to the number of submunitions used: the greater the use, the greater the impact. However, other factors can exacerbate the impact, such as higher population density in a particular contaminated area, as in the case of Quang Tri province in Vietnam, where twice as many casualties occurred in the emergency post-strike phase as in the significantly more contaminated Savannakhet province of Lao PDR.

However, population density is not the only determinant of casualty rates. There is a direct relationship between the availability of arable land and resources and the casualty rate. The greater the demand for arable or other subsistence lands, the more impoverished communities are forced to interact with cluster submunitions contamination. The most vulnerable communities suffer proportionate to their need to survive in already difficult circumstances. For example, the ethnic minority populations in the uplands and highlands of Quang Tri province in north-central Vietnam are several times more likely to become casualties while farming than are people in the lowlands. In Afghanistan, nomads in sparsely inhabited areas were especially vulnerable to cluster submunitions contamination in their grazing lands and trails, leading an already impoverished population to the additional risks of scrap metal collection to sustain their income.

Lesson 3: Cluster submunitions create a peak in returnee casualties during the post-strike period: measures for protection are crucial

A distinct spike in cluster submunitions casualties was identified during the "returnee" period in numerous impacted countries, such as Afghanistan, Albania, Kosovo, Lao PDR, Lebanon and Vietnam. Populations unaware of and unprepared for the dangers of unexploded cluster munitions constitute near-majorities of the total cluster submunitions casualties during this period. In cases of prolonged use and high rates of contamination the peak lasts up to five years. In lesser-contaminated locations where the conflict was shorter, the same "spike" is clearly visible in a more compressed timeframe (one to two years). Children are especially vulnerable during this period, but women also seem to be more affected at this time than in later stages. In Kosovo, 53 percent of cluster submunitions casualties in 1999 occurred in the two months after the end of the conflict, with boys constituting the largest group.

Initially, incidents during the post-strike phase occur while people are returning home and performing house reconnaissance. In the second phase, incidents happen while people are taking risks to provide for their livelihoods in contaminated areas. The predominant activities and locations of these incidents are in or near population centers, in the fields, and in other areas where people access daily subsistence resources.

Given the precarious economic situation of most people after conflict and the limited resources available, immediate clearance, risk education, and alternative livelihood programs are the only way to stop casualties from occurring at such elevated rates.

Lesson 4: Cluster munitions use limits economic opportunities for poor families through death, disability, and hazards to livelihood

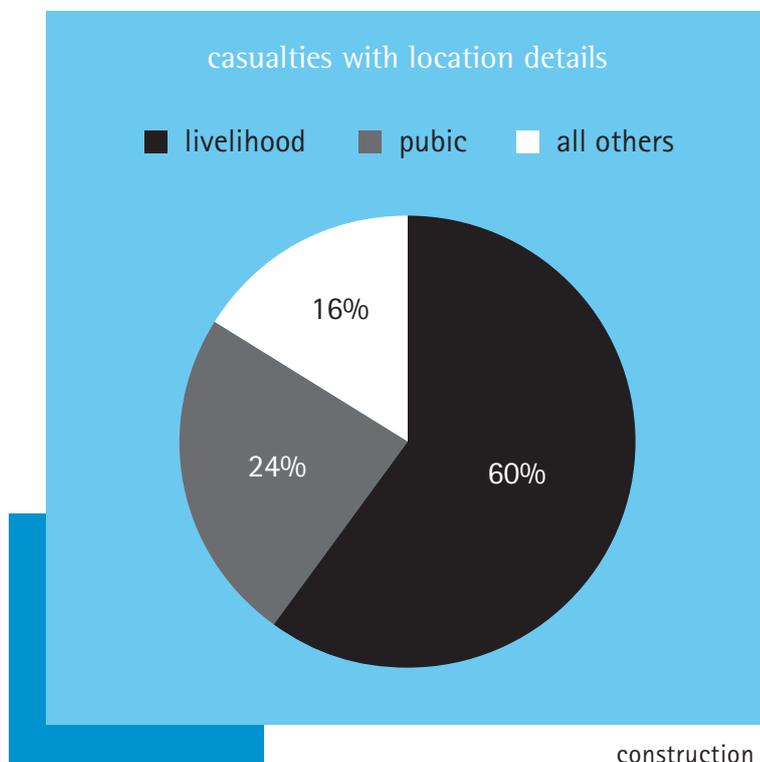
Not only are civilians most at risk, but the vast majority of civilian casualties occur while people carry out their normal, daily livelihood activities in their usual and accustomed places. Since cluster munitions use most impacts economically vulnerable people in areas already suffering economic hardship, this amply demonstrates the direct socio-economic consequences affecting communities and countries.

The majority of cluster munitions casualties worldwide are poor, uneducated young males at work. Males represent 76.8 percent of casualties where the gender is known and constitute a similar percentage of casualties carrying out livelihood activities. Casualty data show that the people most likely to become cluster submunitions casualties are adult men at nearly 45 percent of total casualties and that the majority of them were undertaking livelihood activities at the time of the incident. Often they are agricultural workers or subsistence farmers, in some cases supplementing their daily subsistence needs by foraging for food or collecting scrap metal to sell. Boys constitute the vast majority of child casualties, averaging between 85 and 90 percent. In particular, boys between five and 15 are the most vulnerable to becoming cluster submunitions casualties, and often become casualties in groups while playing with items, in parallel with activities such as herding and farming. In most cases boys constitute the second largest group of casualties, if not the largest as is the case in Afghanistan, Kosovo and Lao PDR.

In many of the affected countries, men are the traditional earners; as adult males and boys represent the majority of casualties, the socio-economic loss for both the immediate term and distant future cannot be underestimated. At least two generations will be greatly affected, particularly since the relative poverty of the people affected reduces their chances of benefiting from education, social security, or adequate medical assistance.

A comparison between casualty activities and regional economic and social data shows that there is more to these incidents than just being men at work. Cluster submunitions casualties often occur while people enter dangerous livelihood areas basic to their economic existence or try to find resources which could add to meager incomes (60 percent of casualties). In Afghanistan, all casualties who had received MRE and knew they were engaging in risk-taking behavior did so out of economic necessity. In Lao PDR, over 1,000 people were killed by submunitions while digging, mostly out in the field weeding or sowing their

crops. In Albania, although cluster munitions contamination is limited in extent and area, nearly 70 percent of the population stated they needed to enter contaminated land out of economic necessity. In these three cases, as is typical of the predicament faced by many cluster submunitions-affected communities, people have little choice but to continue to use their land.



In the longer term, the high rate of male casualties and economic hardship will also result in a higher number of female casualties, as female-headed households will have to carry out tasks traditionally performed by men. This pattern is already visible in Tajikistan, which displays a markedly higher percentage of female casualties. In Kosovo, the risk of extreme poverty is twice as high for women-headed households than for male-headed ones.

There is a link between education and income levels and the incidence of casualties, with those having the lowest education and income being the most vulnerable. In Vietnam, 97 percent of mine/ERW-impacted families earned less than US\$200 per year and 95 percent of mine/ERW casualties did not attain a high school education. In Lebanon, at least 52 percent of cluster munitions survivors live on a monthly income that is less than US\$330 and 77 percent did not complete secondary education. In general, unemployment and isolation increases after the incident, especially among the poorest groups and in professions where mobility is needed.

Among the socio-economic impacts, psychological impact is a little-included casualty datum and is found in few surveys. However, neither the trauma a cluster submunitions incident causes all involved,

nor the fear of cluster submunitions contamination, should be underestimated. Casualty reports indicate that cluster munitions strikes, their suddenness, and the widespread death and injury impart lasting trauma – many survivors report that they experience psychological hardship after the event which can lead to economic impacts such as inability to work. In Bosnia and Herzegovina, the death of a villager herding animals due to a cluster submunition made locals in the area afraid and led them to keep their livestock in the stables rather than going out to graze.

Cluster munitions contamination also adversely impacts broader development and security, as it delays the return of IDPs and blocks land for road, dam, and electricity construction or reconstruction. The Afghanistan Poverty Reduction Strategy states that mine/ERW contamination deters people from accessing basic services such as health clinics and from sending their children to school. The equivalent of one year of clearance is needed to construct roads and power lines in contaminated land. In Lao PDR, hydroelectric dam construction is being slowed down by BLU clearance and risk education is needed for all those involved in the project.

Lesson 5: Full disclosure of cluster munitions strike details and immediate clearance of failed cluster submunitions is imperative to minimizing casualties and socio-economic loss in impacted communities

A full reckoning of casualties from both submunitions strikes and subsequent contamination is probably impossible, but a consistently disproportionate pattern of harm to civilians has been demonstrated. From Southeast Asia to Afghanistan, Iraq, Chechnya, Lebanon, and other places, reports of cluster munitions either targeted at or inadvertently used against civilians have continued, as do reports of failed submunitions and their impact on communities – the number of casualties grows daily. Time and time again, this fatal footprint determines the fate of individuals and communities, often decades after the initial conflict.

Planning and implementing a comprehensive response to the threat posed by cluster munitions can only be done when complete and accurate information about strike locations is provided to those in charge of dealing with the response. This

needs to be done in a timely manner. Otherwise, new strike locations will continue to be identified on a regular basis, as is the case in Kosovo, Lebanon and Nagorno-Karabakh. While strike coordinates can be mapped, they are not sufficient to determine where cluster submunitions suspected hazard areas (SHA) should or would be. This also depends on the circumstances of the cluster munitions' delivery and the terrain on which they are delivered and requires additional assessment. In this particular regard, contamination mapping could begin with marking, reconnaissance and MRE, then proceed to area reduction, clearance, survivor assistance and infrastructure repair. When provided with sufficient information, clearance efforts could be mounted more swiftly and efficiently. They thereby reduce not only the short-term, but also the mid- and long-term impacts of cluster submunitions, as well as the resources needed for these operations. In Cambodia, clearance efforts were said to significantly, concretely contribute to reducing poverty by reducing the impact of new casualties on impoverished families.

The international community has realized that fast and effective clearance is vital. The entry into force of Protocol V of the Convention on Certain Conventional Weapons (CCW) on Explosive Remnants of War seeks to regulate ERW clearance, including the clearance of UXO caused by cluster munitions. However, past events have shown that even fast clearance has not been enough to prevent cluster submunitions from causing civilian casualties. Furthermore, as this Protocol is not retroactive, it will not address the harm that has been done already, nor change the level of assistance to affected communities. The experiences of Afghanistan, Cambodia, Iraq, Lao PDR, and Vietnam say it all: extensive cluster munitions use generally and failed submunitions particularly pose a volatile and multi-generational threat to civilians where clearance efforts are delayed. Immediate identification and clearance of submunitions contamination is the only way to minimize post-conflict casualties. However, while immediate and comprehensive clearance remains vital for reducing civilian casualties, swift clearance responses have not been sufficient to prevent significant casualties from occurring in places like Albania, Lebanon, and Kosovo.

The evidence of *where* cluster munitions are dispensed and *when* that use reaches its peak indicates that there should be an awareness of the impact these munitions will have on communities. The armed forces of the world's leading cluster munitions user, the United States, consider any area contaminated with cluster submunitions a *de facto* minefield, and the casualty and community analysis is consistent with that assessment.

A sufficient body of evidence is presented in this report to warrant a focused, empirical study of the impact of cluster submunitions from a similar perspective – not simply as ERW, but as *the* ERW to be reckoned with in cluster submunitions-affected countries and areas. This munition type exhibits greater kinship with landmines than with other ERW types and often accounts for as many or more casualties than all other ERW combined.

There are clear indications that preventing the use of cluster munitions is the only way to protect civilian populations from undue harm. The introduction to *Circle of Impact* notes that cluster munitions were first used with harmful impact on civilians during the Second World War. In conclusion, it can be observed that the vast majority of submunitions used since 1965 were also designed for another time and another war, for which they were designed as destructive, wide-area weapons. That war was the Cold War.

On 23 February 2007, 47 out of 50 governments rallied behind the so-called Oslo Declaration which states:

"Recognizing the grave consequences caused by the use of cluster munitions and the need for immediate action, states commit themselves to:

1. Conclude by 2008 a legally binding international instrument that will:

(i) prohibit the use, production, transfer and stockpiling of cluster munitions that cause unacceptable harm to civilians, and

(ii) establish a framework for cooperation and assistance that ensures adequate provision of care and rehabilitation to survivors and their communities, clearance of contaminated areas, risk education and destruction of stockpiles of prohibited cluster munitions.

2. Consider taking steps at the national level to address these problems.

3. Continue to address the humanitarian challenges posed by cluster munitions within the framework of international humanitarian law and in all relevant fora.

4. Meet again to continue their work, including in Lima in May/June and Vienna in November/December 2007, and in Dublin in early 2008, and welcome the announcement of Belgium to organize a regional meeting."

As a Cold War relic, cluster munitions are coming closer to being prohibited by the day. An increasing number of states have recognized the human impact of these weapons and chosen to act against them. However, even with a legally binding instrument on cluster munitions, the existing legacy will continue to exact its toll on innocent civilians. The hardships of survivors, their families, and communities will last until sufficient resources are allocated to neutralizing the risks of their exposure to the lingering and indiscriminate threat posed by cluster munitions.

ANNEX 1: Impact scoring methodology

Impact measurements were employed to provide an at-a-glance guide showing the level of impact cluster munitions use has had within a country or area. Used in conjunction with the text, this impact reporting provides reference points for the research and findings in the relevant country reports of the study.

Three criteria were developed to portray different types of impacts of cluster submunitions use:

- Impact on human lives
- Impact on resources
- Impact on the public sector.

A table was used to present the intersection of the three impact criteria and a set of graduated indicator levels: [1] low impact, [2] medium impact, and [3] high impact.

Table: Impact of cluster munitions

Categories	Low (1)	Medium (2)	High (3)
1 Impact on human lives			✓
2 Impact on resources		✓	
3 Impact on public sector	✓		
ST SUBTOTAL	1	2	3
T TOTAL			6

Example: In this table one of each criteria has been used, $1 \times [1] + 1 \times [2] + 1 \times [3]$, and the total of all indicator levels for the three criteria is [6]. The highest possible combination of indicator levels is [9]

Impact on human lives

- The total number of known casualties, including the social and economic effects on the families and communities of those people killed and injured.
- Injury and disability amongst casualties, including the number of injured people in relation to the existing capacity to provide services. This also includes the number of injured in relation to the quality of casualty data collection and the degree to which data is used for assisting survivors and their communities.

- Fear in communities, both due to cluster munition strikes and due to cluster submunitions contamination, where prolongation of the conflict is perceived due to failed cluster submunitions incidents, and where fear and trauma remain even after submunitions clearance.

Impact on resources

- Cluster munition strikes preventing access to food, housing, resources, services and rights.
- Strike damage to or destruction of housing, property, agricultural resources and infrastructure, including the level to which this damage exacerbates existing poverty or vulnerability.
- Lasting cluster submunitions contamination of housing, property, agricultural resources and infrastructure, which causes levels of inaccessibility of previously used areas and levels of risk-taking work practices or socio-economic behavior. This includes the relationship between cluster submunitions contamination and the level of poverty or social vulnerability of individuals and communities.

Impact on the public sector

- Impact on the health system and medical resources, including emergency and ongoing medical care and rehabilitation in comparison to the capacity of the health system both during and after strikes.
- Impact on development and reconstruction, including blockages to roads, land and infrastructure development, referring to direct financial costs and the diversion of resources.
- Cost for risk reduction programs, including risk education, clearance and victim assistance, referring to direct financial costs and the diversion of resources.

Principal factors employed to survey the severity of the impact within the three criteria are dependent on local conditions and thus necessarily differ slightly for each country. For the majority of countries and areas where substantial analysis was possible, research provided sufficient evidence to support assessment for at least two of the three points under each of these three criteria. Impact measurement results were also reinforced by outside parties with specific knowledge on a country, area or issue of reporting.

Comparisons

Impact measurements relate foremost to the findings in the text for each country or area report. Impact measurement in the study is not used to portray comparisons between individual countries, areas or geographical regions. However, two underlying points became evident when completing impact tables for the country reports. Firstly, the impact of cluster munitions is relative to the level of their use. Secondly, cluster munitions use almost always causes multiple human impacts.

ANNEX 2: Overview of cluster munitions contaminated countries and areas where casualties are suspected

Country	Period of cluster munitions use	Types of cluster submunitions identified	Contamination estimate
Angola	It is unknown when cluster munitions were used in Angola and by whom. Angola stockpiles cluster munitions. ⁸¹⁶	PTAB-2.5 K0 and AO-2.5 RT ⁸¹⁷ and RBK-250/275 cluster munitions canisters were found; some were destroyed in stockpile depot fire. ⁸¹⁸	Stockpiled cluster munitions were seen in and near an ammunition dump in Luanda in 2001 and also elsewhere in Angola. ⁸¹⁹
Democratic Republic of Congo	It is unknown when cluster munitions have been used and there are no known use allegations. ⁸²¹ DRC is not known to have stocks.	No types have been identified, but DRC possesses 122mm BM-21 that can be fitted with cluster warheads. ⁸²²	Unknown
Russian Federation (excluding Chechnya)	User, stockpiler and producer of cluster munitions. No known strikes have occurred in Siberia.	Most used were: AO-2.5, AO-1Sch, PTAB-2.5/M, OFAB-2.5, and ShOAB-0.5 submunitions. ⁸²⁴	Contamination was found in Chita province, Siberia.
Guinea Bissau	There was possible use during the 1989-1999 civil war, but no air-delivered munitions. ⁸²⁶	PTAB-2.5 and RBK-250 were found. ⁸²⁷	Large numbers of submunitions were in weapons depots. ⁸²⁸ Unstable PTAB-2.5s are scattered as a result of a June 1998 depot attack. Clearance started as of 2007. ⁸²⁹
Liberia	Allegedly, the US carried out a strike in 1997 in support of West African troops. ⁸³¹	Unknown US-produced.	No contamination was found, but cluster munitions damage to Monrovia airport runway was alleged. ⁸³²

Failure rate estimate	Casualties	Data collection	Economic indicators (GDP in US\$ - HDI ^[815])
N/A	No known casualties: Luanda dump was removed, but it is possible that submunitions remain underground beneath a residential area newly built on the site. ⁸²⁰	Incomplete	GDP (PPP): 51.9 billion Per capita: 4,300 HDI: 0.439 Rank: 161, low
N/A	145 casualties: 7.8 percent of recorded mine/ERW casualties, including two cluster munitions incidents recorded in Orientale Province 2006-2007, killing five. ⁸²³	Incomplete	GDP (PPP): 44.6 billion Per capita: 700 HDI: 0.391 Rank: 167, low
N/A	Three fatal child casualties (two boys, one girl) caused by ShOAB-0.5 submunition in Chita, Siberia in 2006, possibly left as a result of military training or activity. ⁸²⁵	None	(Figures are for Russian Federation) GDP (PPP): 1.723 trillion Per capita: 12,100 HDI: 0.797 Rank: 65, medium
Unknown	11 ⁸³⁰	Unavailable/incomplete	GDP (PPP): 1.224 billion Per capita: 900 HDI: 0.349 Rank: 173, low
Unknown	No known casualties	None	GDP (PPP): 2.911 billion Per capita: 1,000 HDI: N/A

Country	Period of cluster munitions use	Types of cluster submunitions identified	Contamination estimate
Pakistan / Kashmir	In 1971, India allegedly used cluster munitions in Kashmir and the Former Soviet Union reportedly used cluster munitions in FATA during the Afghanistan invasion. ⁸³³	Unknown	Dara Sher Khan in Kashmir and FATA border areas with Afghanistan, North and South Waziristan, Kurram and Bajaur agencies could be contaminated. ⁸³⁴
Saudi Arabia	Cluster munitions were used against the Iraqi army during the so-called battle of Khafji from 29 January to 1 February 1991. ⁸³⁶	CBU-59 bombs with BLU-77 submunitions and Mk118 (Rockeye) submunitions. ⁸³⁷	Borders of Saudi Arabia with Iraq and Kuwait are contaminated by ERW. ⁸³⁸
Uganda	Unknown; cluster munitions may have been used in the conflict between the Lord's Resistance Army and the Ugandan Government from 1986 onwards. ⁸³⁹	Suspected DPICM submunitions were found by Mines Awareness Trust (MAT). ⁸⁴⁰ PTAB-2.5 M cluster submunitions have also been identified. ⁸⁴¹	At least 65 submunitions were removed from the Omel-Gulu area in 2006-2007. ⁸⁴²
Yemen	Unknown	Yemen stockpiles KMG-U aerial dispensers that are Soviet-manufactured and release AO-2.5, ODS-OD, PTAB-2.5, and PTAB-1M submunitions. ⁸⁴⁵	Nineteen of 20 governorates are mine/ERW affected. No figures on cluster munitions specifically. ⁸⁴⁶

Failure rate estimate	Casualties	Data collection	Economic indicators (GDP in US\$ - HDI)
Unknown	Reportedly, 25 percent of casualties in Dara Sher Khan are due to ERW, including cluster munitions. ⁸³⁵	None	(Figures are for Pakistan) GDP (PPP): 427.3 billion Per capita: 2,600 HDI: 0.527 Rank:135, medium
Unknown	No known casualties	None	GDP (PPP): 374 billion Per capita: 13,800 HDI: 0.777 Rank: 76, medium
N/A	An estimated three percent of 1,387 recorded casualties are cluster submunitions casualties. ⁸⁴³ Five more casualties were suspected in 2006. ⁸⁴⁴	Incomplete	GDP (PPP): 51.89 billion Per capita: 1,800 HDI: 0.502 Rank: 145, low
Unknown	No casualties were recorded, but reportedly casualties have occurred. ⁸⁴⁷	Incomplete ⁸⁴⁸	GDP (PPP):20.38 billion Per capita: 900 HDI: 0.412 Rank: 150, low

ANNEX 3: Confirmed cluster submunitions casualties in affected countries and areas

Confirmed cluster submunitions casualties	Total	Injured	Killed	Unknown status	Man	Woman	Boy
	13,306	7,246	5,475	585	4,210	1,020	3,007
Afghanistan	733	557	175	1	322	50	232
Albania	56	46	10	0	21	5	1
Bosnia-Herzegovina	92	79	13	0	0	1	0
Cambodia	127	98	29	0	42	13	61
Chad	N/A						
Croatia	237	217	20	0	120	80	21
Chechnya	636	335	301	0	2	29	39
Eritrea	10	7	3	0	0	0	4
Ethiopia	272	215	57	0	0	0	0
Iraq	2,989	1,591	1,381	17	261	63	97
Israel	13	12	1	0	1	1	1
Kosovo	196	135	61	0	52	5	87
Kuwait	198	137	61	0	0	0	0
Lao PDR	4,837	2,179	2,531	127	2,293	471	1,670
Lebanon	587	462	125	0	341	51	135
Montenegro	8	6	2	0	0	1	4
Nagorno-Karabakh	13	8	5	0	5	0	7
Serbia	94	66	28	0	50	26	10
Sierra Leone	28	18	10	0	0	0	0
Sudan	43	25	18	0	0	0	0
Syria	5	4	1	0	0	0	0
Tajikistan	48	18	30	0	18	9	16
Vietnam	2,080	1,030	610	440	682	215	620
Western Sahara	4	1	3	0	0	0	2

Girl	Military	Deminer	Unknown	Estimated casualties	
				low	high
530	275	358	3,906	56,218	64,982
34	79	9	7	2,814	4,132
1	3	20	5		
0	0	5	86	152	
11	0	0	0		
11	1	4	0		
1	4	0	561	1,000	
0	0	0	6	170	
0	0	0	272		
56	125	100	2,287	5,500	8,000
0	0	0	10		
1	32	15	4	300	500
0	1	191	6	4,000	
279	0	0	124	6,620	
23	24	11	2	923	
0	0	0	3		
1	0	0	0		
3	0	3	2	100	
0	0	0	28		
2	4	0	37	89	
0	1	0	4		
5	0	0	0		
102	1	0	460	34,550	52,350
0	0	0	2		

ANNEX 4: Status of casualty data collection in cluster submunitions-affected countries

Status of casualty data collection	Complete data collection	Data collection system	Limited or episodic data collection	No data collection system	Data on conflict casualties	Differentiate ERW type
Total	3	19	16	5	4	11
Afghanistan		•	•		•	•
Albania	•	•				•
Bosnia-Herzegovina*		•	•		•	
Cambodia	•	•				
Chad		•	•			
Croatia	•	•				•
Chechnya		•	•			
Eritrea		•	•			
Ethiopia		•	•			
Iraq		•	•			•
Israel				•		
Kosovo*		•	•			•
Kuwait				•		
Lao PDR		•	•			•
Lebanon		•	•		•	•
Montenegro				•		
Nagorno-Karabakh		•	•		•	•
Serbia*		•	•			
Sierra Leone				•		
Sudan		•	•			•
Syria				•		
Tajikistan		•	•			•
Vietnam		•	•			•
Western Sahara		•	•			

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Notes

- ¹ The content of this publication is the sole responsibility of Handicap International (HI) and can in no way be taken to reflect the views of the sponsors, in-kind donors, or the Central Intelligence Agency (CIA) whose country maps were used.
- ² Definitions suggested by the authors unless stated otherwise.
- ³ Convention on Prohibitions or Restrictions on the Use of Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects (CCW), Protocol on Explosive Remnants of War (Protocol V to the 1980 Convention), 28 November 2003, Art. 2, <http://www.icrc.org/ihi.nsf/385ec082b509e76c41256739003e636d/c110d2926d08a892c1256e280056b275>, accessed 13 April 2007. Hereinafter CCW Protocol V. Protocol V entered into force on 12 November 2006 after 24 countries agreed to be bound by it, <http://www.icrc.org/ihi.nsf/INTRO/610?OpenDocument>, accessed 13 April 2007.
- ⁴ There is no official definition for cluster munitions and submunitions as of April 2007. The proposed definition builds on text prepared by UNMAS, UNDP and UNICEF.
- ⁵ CCW Protocol V, Art. 2.
- ⁶ CCW Protocol V, Art. 2.
- ⁷ Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, Art. 2, <http://www.icbl.org/treaty/text/english>, accessed 13 April 2007.
- ⁸ CCW Protocol V, Art. 2.
- ⁹ Commander Sir Aylmer Firebrace, C.B.E, R.N. Chief of Fire Staff, British National Fire Service *Fire and the Air War* National Fire Protection Assoc. (U.S.), 1946, <http://www.inert-ord.net/usa03a/usa6/bfly/index.html>, accessed 20 April 2007.
- ¹⁰ Human Rights Watch (HRW), *Timeline of Cluster Munition Use*, February 2007, <http://hrw.org/backgrounder/arms/cluster0207/3.htm>, accessed 20 April 2007.
- ¹¹ "The Iraq War's Civilian Toll," *Weekend All Things Considered*, National Public Radio, Washington, D.C., 15 April 2007, excerpted from program transcript, p. 1. The interviewee was John Tracy, a military lawyer who paid "solatia" or condolence payments during his tour in Baghdad. "...the U.S. government has so far paid \$31.6 million for loss of life, injury and property to civilians in Iraq. These payments are made at the discretion of commanders and of military lawyers like John Tracy, who adjudicated nearly 2,000 claims in Iraq in 2003 and 2004."
- ¹² Victims of cluster submunitions include the directly affected individual, his/her family and the community affected.
- ¹³ "Assistance" should be understood to include, among other things, a prohibition on investments, on involvement in joint military activities in which cluster munitions may be used, and on transit of cluster munitions.
- ¹⁴ The reports should include, for example, information on national implementation measures, stockpiles and stockpile destruction, contaminated areas and clearance activities, risk education activities, victim assistance activities, and *victims'* rights.
- ¹⁵ HI, *Living with UXO* survey data.
- ¹⁶ Kenneth H. Bacon, Assistant Secretary of Defense for Public Affairs, US DoD News Briefing, Tuesday, June 22 1999, <http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=502>, accessed 5 April 2007.
- ¹⁷ ICBL, *Landmine Monitor Report 2001: Toward a Mine-Free World*, Human Rights Watch, New York, August 2001, p. 958.
- ¹⁸ Fact Sheet, United States Clearance of Unexploded Cluster Munitions, Office of the Spokesman, 23 February 2007, <http://www.state.gov/r/pa/prs/ps/2007/february/81000.htm>.
- ¹⁹ Carlotta Gall, New York Times Foreign Desk, "U.N. Aide in Kosovo Faults NATO on Unexploded Bombs," Late Edition - Final, Section A, p3, 23 May 2000, available at <http://www.unmikonline.org/press/wire/im230500.html>, accessed 30 September 2006
- ²⁰ Carlotta Gall, New York Times Foreign Desk, "U.N. Aide in Kosovo Faults NATO on Unexploded Bombs," Late Edition - Final, Section A, p3, 23 May 2000, available at <http://www.unmikonline.org/press/wire/im230500.html>, accessed 30 September 2006
- ²¹ The Praxis Group, Ltd., *Willing to Listen: An Evaluation of the United Nations Mine Action Program In Kosovo 1999-2001*, Riverside, Geneva, 12 February 2002, p.60.
- ²² "UN set to transfer demining activities to Kosovo authorities," *ReliefWeb*, 14 December 2001, <http://www.reliefweb.int/>, accessed 29 September 2006.
- ²³ Email from Bajram Krasniqi, OKPCC EOD Management, Pristina, 5 April 2007.
- ²⁴ Unless noted otherwise, indicators and map are taken from: Central Intelligence Agency (CIA), *The World Factbook - Cambodia*, 2006, <https://www.cia.gov/cia/publications/factbook/geos/cb.html>, accessed 2 April 2007. The designations employed and the presentation of material on this map do not imply an expression of any opinion on the part of HI concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers and boundaries.
- ²⁵ UNDP, *Human Development Report 2006, Country Fact Sheets - Cambodia*, http://hdr.undp.org/hdr2006/statistics/countries/data_sheets/cty_ds_KHM.html, accessed 2 April 2007. The HDI measures the average progress of a country in human development.
- ²⁶ *Ibid.* The Human Poverty Index for developing countries (HPI-1) focuses on the proportion of people below a threshold level in the same dimensions of human development as the human development index.
- ²⁷ HI, *Fatal Footprint: The Global Human Impact of Cluster Munitions*, Preliminary Report, Brussels, 2 November 2006, p. 11 (hereinafter HI, *Fatal Footprint Preliminary Report*).
- ²⁸ *Ibid.*, p. 11.
- ²⁹ HI analysis of US Air Combat Data for Southeast Asia (hereinafter US Air Combat Data), as cited in the Vietnam and Lao reports. The extracted sub-dataset contains only antipersonnel and anti-material cluster submunitions. All cluster munitions containing antipersonnel and antivehicle mines, minelets, incendiary, smoke, CS tear gas, etc. were excluded from the totals, which refer only to records for which both the type and the quantity of items were confirmed by at least two sources. Where sources disagreed on the number of units per cluster munitions, the lower totals were used. Unless indicated otherwise, all cluster submunitions analysis is based on the extracted sub-dataset for Cambodia.
- ³⁰ HI, *Fatal Footprint Preliminary Report*, p. 11.
- ³¹ US Air Combat Data.
- ³² Unless noted otherwise, HI analysis of CMVIS updated casualty data provided by Cheng Lo, Database Management Office Supervisor, CMVIS, Phnom Penh, 23 March 2007 (hereinafter CMVIS data).
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- ³⁴ HI, *Fatal Footprint Preliminary Report*, p. 11.
- ³⁵ *Ibid.*, p. 12.

- ³⁶ The provinces with the most cluster submunitions casualties are also the four provinces with the most ERW incidents in comparison and account for 46.5 percent of submunitions casualties: Kampong Cham (17), Kracheh (15), Kandal (14), and Stueng Traeng (13).
- ³⁷ HI analysis of CMVIS data.
- ³⁸ See the Lao PDR and Vietnam chapters in this report.
- ³⁹ US Air Combat Data.
- ⁴⁰ Royal Government of Cambodia, *National Poverty Reduction Strategy 2003–2005*, 20 December 2002, pp. 29.
- ⁴¹ *Ibid.*, pp. 29, 30–31, 41, 122–123, 226.
- ⁴² International Monetary Fund (IMF), "Cambodia: Poverty Reduction Strategy Paper," in *National Strategic Development Plan 2006–2010*, IMF Country Report No. 06/266, Washington D.C., July 2006, pp. xi, 15, 28, 49, 88–89.
- ⁴³ Richard Moyes, *Tampering: Deliberate handling & use of live ordnance in Cambodia*, HI – Belgium, Mines Advisory Group (MAG), Norwegian People's Aid (NPA), August 2004, p. 8; Ruth Bottomley, *Crossing the Divide: Landmines, Villagers and Organizations*, International Peace Research Institute, Oslo, 2003, pp. 27–28; Richard Moyes, *A Study of Scrap Metal Collection in Lao PDR*, Geneva International Center for Humanitarian Demining (GICHD), Geneva, September 2005, pp. 31–33.
- ⁴⁴ Ruth Bottomley, *Crossing the Divide: Landmines, Villagers and Organizations*, International Peace Research Institute, Oslo, 2003, p. 2.
- ⁴⁵ Ruth Bottomley, *A Study on the Dramatic Decrease of Mine/UXO Casualties in 2006 in Cambodia*, CMVIS, HI – Belgium, NPA and UNICEF, Phnom Penh, February 2007, pp. 9–10.
- ⁴⁶ CMVIS, *Monthly Report*, February 2007, p. 6. In February, 18 of 20 casualties in the province were due to ERW, and in Siem Reap, all 18 casualties were due to ERW. Kampong Cham ranked second for cluster munitions strikes.
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- ⁴⁸ Unless noted otherwise, indicators and map are taken from: Central Intelligence Agency (CIA), *The World Factbook – Laos*, 2006, <https://www.cia.gov/cia/publications/factbook/geos/la.html>, accessed 2 April 2007. The designations employed and the presentation of material on this map do not imply an expression of any opinion on the part of HI concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries.
- ⁴⁹ UNDP, *Human Development Report 2006, Country Fact Sheets – Lao People's Dem. Rep.*, http://hdr.undp.org/hdr2006/statistics/countries/data_sheets/cty_ds_LAO.html, accessed 2 April 2007. The HDI measures the average progress of a country in human development.
- ⁵⁰ *Ibid.* The Human Poverty Index for developing countries (HPI-1) focuses on the proportion of people below a threshold level in the same dimensions of human development as the human development index.
- ⁵¹ HI, *Fatal Footprint Preliminary Report*, p. 13.
- ⁵² HI analysis of US Air Combat Data for Southeast Asia, as cited in the Cambodia and Vietnam reports. Unless indicated otherwise, all cluster submunitions analysis is based on the extracted sub-dataset for Lao PDR.
- ⁵³ "The UXO/Mine Action Sector in Lao PDR," presentation by Somnuk Vorasarn, Deputy Director, NRA at *Regional Forum: Taking Action on Cluster Munitions*, Phnom Penh, 15 March 2007, pp. 4, 5, 8.
- ⁵⁴ Unless noted otherwise, HI analysis and total confirmed cluster submunitions casualties are based on HI, *Living with UXO* survey data (hereinafter HI, *Living with UXO* data), and UXO Lao data (hereinafter UXO Lao data) for the period 1996 to March 2007, exclusive of 1997, for which no data was available (hereinafter, "Lao casualty data"). Together, these data sets cover the period 1964 – March 2007.
- ⁵⁵ ICBL, *Landmine Monitor Report 2006*, p. 983.
- ⁵⁶ Email from Michael Boddington, Victim Assistance Technical Advisor, NRA, Vientiane, 3 and 7 April 2007.
- ⁵⁷ HI, *Living with UXO*, p. 24.
- ⁵⁸ Data provided via email by Michael Boddington, NRA, Vientiane, 9 and 10 April 2007. However, there are no records available for 1998.
- ⁵⁹ Analysis of HI, *Living with UXO* data.
- ⁶⁰ Case Study on UXO Vulnerability and Poverty in Selected Villages of Kaleum District, Sekong Province, <http://www.wepa-db.net/policies/cases/laos.htm>, accessed 12 April 2007.
- ⁶¹ Central Intelligence Agency (CIA) *The World Factbook – Laos*, 2006, <https://www.cia.gov/cia/publications/factbook/geos/la.html>, accessed 2 April 2007. The arable land of Lao is at 4.01 percent, and only 1,750 square kilometers is irrigated. Among environmental issues, "unexploded ordnance" is listed ahead of deforestation, soil erosion, and access to potable water.
- ⁶² International Committee of the Red Cross (ICRC), *Explosive remnants of war: the lethal legacy of modern armed conflict*, Geneva, July 2004, p. 6. "At the current rate of 50,000 submunitions cleared per year, it will take at least 180 years to free the country from the threat."
- ⁶³ US Air Combat Data.
- ⁶⁴ US Air Combat Data.
- ⁶⁵ Committee for Planning and Investment, Lao PDR: National Socio Economic Development Plan (2006–2010), Vientiane, October 2006, pp. 102–103.
- ⁶⁶ *Ibid.*, pp. 102–103.
- ⁶⁷ "The UXO/Mine Action Sector in Lao PDR," presentation by Somnuk Vorasarn, NRA at *Regional Forum: Taking Action on Cluster Munitions*, Phnom Penh, 15 March 2007, pp. 4, 5, 8.
- ⁶⁸ National Poverty Eradication Programme, Eighth Round Table Meeting, Vientiane, 4 and 5 September 2003, p. 125.
- ⁶⁹ *Ibid.*, pp. 30, 37, 125.
- ⁷⁰ Lao People's Democratic Republic, Committee for Planning and Investment and Poverty Reduction Fund, *Annual Report 2005*, Vientiane, April 2006, p. 28.
- ⁷¹ "The UXO/Mine Action Sector in Lao PDR," presentation by Somnuk Vorasarn, NRA at *Regional Forum: Taking Action on Cluster Munitions*, Phnom Penh, 15 March 2007, p. 21.
- ⁷² Nam Theun 2 Power Company Ltd., "Nam Theun 2 Hydroelectric Project, Semi-Annual Progress Report, Period July to December 2005," 15 January 2006, pp. 15, 22, 26, 43.
- ⁷³ Richard Moyes, "A Study of Scrap Metal Collection in Lao PDR," GICHD, Geneva, September 2005, p. 27.
- ⁷⁴ UNICEF and HI, *Victim and Survivor Assistance Study, Lao PDR*, Vientiane, April 2006, pp. 4–6, 15; ICBL, *Landmine Monitor Report 2006*, pp. 972–986.
- ⁷⁵ Unless noted otherwise, indicators and map are taken from: Central Intelligence Agency (CIA) *The World Factbook – Vietnam*, 2006, <https://www.cia.gov/cia/publications/factbook/geos/vm.html>, accessed 2 April 2007. The designations employed and the presentation of material on this map do not imply an expression of any opinion on the part of HI concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries.

- ⁷⁶ UNDP, *Human Development Report 2006, Country Fact Sheets – Vietnam*, http://hdr.undp.org/hdr2006/statistics/countries/country_fact_sheets/cty_fs_VNM.html, accessed 8 April 2007. The HDI measures the average progress of a country in human development.
- ⁷⁷ *Ibid.* The Human Poverty Index for developing countries (HPI-1) focuses on the proportion of people below a threshold level in the same dimensions of human development as the human development index.
- ⁷⁸ HI, *Fatal Footprint Preliminary Report*, p. 16. The provinces in descending order of cluster munitions delivered by artillery are Quang Binh, Thua-Thien Hue and Quang Nam.
- ⁷⁹ HI analysis of US Air Combat Data for Southeast Asia, as cited in the Cambodia and Lao reports. Unless indicated otherwise, all cluster submunitions analysis is based on the extracted sub-dataset for Vietnam.
- ⁸⁰ HI, *Fatal Footprint Preliminary Report*, p. 16. There are currently 59 provinces and five major cities in Vietnam, for a total of 64 administrative areas. Previously there were a total of 61 provinces and major cities. The latest administrative boundaries for Vietnam were not available.
- ⁸¹ Vietnam War, *Vietnam War Casualties*, <http://www.vietnam-war.info>, accessed 10 September 2006.
- ⁸² However, detailed records are only available after the end of the war, i.e. from 1975.
- ⁸³ The casualty total is based on: Project RENEW data provided via email by Phan Hung, Database Officer, Project RENEW, Dong Ha, 23 March and 9 April 2007 (hereinafter “RENEW data”) and CPI data sent by Tran Hong Chi, Program Coordinator, CPI, Dong Ha, 5 and 7 April 2007 (hereinafter “CPI data”).
- ⁸⁴ HI, *Fatal Footprint Preliminary Report*, p. 15.
- ⁸⁵ RENEW data.
- ⁸⁶ CPI data.
- ⁸⁷ HI, *Fatal Footprint Preliminary Report*, p. 15.
- ⁸⁸ The extrapolation of RENEW and CPI data combined applies the average rate of cluster submunitions casualties among known device types over the period 1975–2007 to unknown device casualties.
- ⁸⁹ Quang Tri province was chosen for further analysis because casualty data is available for a significant period, whereas in most cluster submunitions-affected provinces there is a complete lack of data. Also, the province remains one of the most underdeveloped and impoverished in the country and, according to strike data, the most contaminated province of Vietnam. Aquatic Resources Management Program, *Poverty and Aquatic Resources in Vietnam: an assessment of the role and potential of aquatic resource management in poor people's livelihoods*, Ha Noi, 2000, p. 7: “the poorest area is the North Central region [which includes Quang Tri province] with the poverty incidence at 71% (followed by) the Northern Uplands region, with the poverty incidence of 59%.” US Air Combat Data: Quang Tri province ranked first owing to the number of cluster munitions dispensed at 3,393 per square kilometer; Quang Binh was second at 2,691 per square kilometer.
- ⁹⁰ See the Lao PDR chapter in this report.
- ⁹¹ *Ibid.*, p. 26.
- ⁹² *Ibid.*, p. 55; BOMICEN/VVAF, *Phase 1 Report*, p. 89.
- ⁹³ RENEW, *Victim/KAPB Study*, p. 23.
- ⁹⁴ BOMICEN/VVAF, *Phase 1 Report*, p. 73.
- ⁹⁵ RENEW, *Victim/KAPB Study*, p. 17.
- ⁹⁶ US Air Combat Data.
- ⁹⁷ BOMICEN/VVAF, *Phase 1 Report*, p. 89.
- ⁹⁸ Project RENEW, *A Study of Situation of Victims of landmine/ERW and Knowledge – Attitudes – Practices – Beliefs of People in Quang Tri Province, Viet Nam*, Quang Tri, September 2006, p. 23 (hereinafter RENEW, *Victim/KAPB Study*).
- ⁹⁹ RENEW, *Victim/KAPB Study*, p. 17, 20; p. 55; Technology Center for Bomb and Mine Disposal/Vietnam Veterans of America Foundation (BOMICEN/VVAF), *Unexploded Ordnance and Landmine Impact Assessment and Technical Survey Report, Phase 1*, Hanoi, 14 October 2005, p. 89 (hereinafter BOMICEN/VVAF, *Phase 1 Report*).
- ¹⁰⁰ RENEW, *Victim/KAPB Study*, pp. 16, 17, 45; BOMICEN/VVAF, *Phase 1 Report*, p. 86–88.
- ¹⁰¹ RENEW, *Victim/KAPB Study*, pp. 17, 20.
- ¹⁰² *Ibid.*, p. 26.
- ¹⁰³ UNDP, *Human Development Report 2006, Country Fact Sheets – Vietnam*, http://hdr.undp.org/hdr2006/statistics/countries/country_fact_sheets/cty_fs_VNM.html, accessed 2 April 2007. The population for Vietnam in 1975 was given as 48 million.
- ¹⁰⁴ US Air Combat Data.
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- ¹⁰⁷ RENEW, *Victim/KAPB Study*, p. 37.
- ¹⁰⁸ RENEW, *Victim/KAPB Study*, p. 55.
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- ¹¹⁶ CPI case studies.
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- ¹²⁵ Human Rights Watch (HRW), *Overview of a Dirty Dozen Cluster Munitions*, 20 February 2007, <http://hrw.org/campaigns/clusters/index.htm>, accessed 6 April 2007 (hereinafter HWR, Dirty Dozen).
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- ¹³⁰ *Ibid.*, pp. 33, 162.
- ¹³¹ *Ibid.*, pp. 16, 33.
- ¹³² *Ibid.*, pp. 32–33.
- ¹³³ Landmine Action-UK (LMA-UK), Actiongroup Landmine.de, Mines Action Canada (MAC); *Explosive remnants of war and mines other than anti-personnel mines: Global survey 2003–2004*, London, March 2005, p. 37, <http://www.landmineaction.org/resources/UKWGLM.pdf>, accessed 6 April 2007 (hereinafter Global survey 2003–2004).
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- ⁸⁴⁰ Nigel Howard, MAT, "Mines Awareness Trust in Eastern Africa," in *Journal of Mine Action*, Issue 10.1, August 2006, updated 3 August 2006, <http://maic.jmu.edu/journal/10.1/focus/howard/howard.htm>, accessed 20 March 2007. Although MAT identifies the submunitions as M79, their description does not match data on this kind of grenade; based on photographic evidence, researchers suspect it is a type of M87 DPICM submunition released from an M971 mortar round containing 24 DPICM submunitions. HI was unable to obtain confirmation from the author of the article, the photographer, or MAT.
- ⁸⁴¹ Email from Thomas Nash, Coordinator, CMC, 29 April 2007.
- ⁸⁴² E-mail from Marcos Rossini, Head of Mine Action, Associazione Volontari per il Servizio Internazionale (AVSI), Kampala, 2 April 2007.
- ⁸⁴³ AVSI, *Gulu District Landmine/ERW Victims Survey Report*, 31 May 2006, p. 20. Rossini, Head of Mine Action, AVSI, Kampala Uganda, 2 April 2007, stated that a more precise number of casualties caused by cluster munitions in Gulu is not available because respondents to the survey usually identify munitions in photographs during incident interviews.
- ⁸⁴⁴ Nigel Howard, MAT, "Mines Awareness Trust in Eastern Africa," in *Journal of Mine Action*, Issue 10.1, August 2006, updated 3 August <http://maic.jmu.edu/journal/10.1/focus/howard/howard.htm>, accessed 20 March 2007.
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- ⁸⁴⁶ ICBL, *Landmine Monitor Report 2006*, p. 784.
- ⁸⁴⁷ Observation during MRE field trip in Aden, 4 February 2007.
- ⁸⁴⁸ ICBL, *Landmine Monitor Report 2006*, pp. 792-793.

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Mohammed Ali Mahmoud explains the danger of cluster submunitions to his children in the outskirts of Mosul. His son had set off an unexploded cluster submunition earlier that day by throwing stones at it. He was lucky not to have been injured.

Cover photo © Sean Sutton/ Mines Advisory Group, 2003



Children draw deadly bomblets from cluster munitions that still litter their playgrounds 30 years after the war is over in Khammouane province, Lao PDR.

Cover photo © Sean Sutton/ Mines Advisory Group, 2006



Children pointing at an unexploded BLU submunition that has been lying in the bushes in Lao PDR for over 30 years.

Cover photo © Sean Sutton/ Mines Advisory Group, 2006

Over half a century has passed since the design and first use of cluster munitions. Ensuing decades have seen both casualties accumulate and the use of these munitions proliferate. Spreading through new conflicts to destroy lives, disrupt communities and deny vulnerable populations access to resources needed for economic recovery, cluster munitions simultaneously assure both a costly and lethal legacy of war for post-conflict generations.

This study is part of an ongoing project that seeks to improve understanding of the impact of cluster munitions by documenting short-, mid- and long-term casualties, cumulative effects of disability, mortality and resource denial on families and communities, and provide insight into the items and activities posing the greatest threats in affected areas.

Circle of Impact: The Fatal Footprint of Cluster Munitions on People and Communities is the first comprehensive study systematically analyzing the impact of cluster munitions on civilian populations through casualty data and socio-economic impact profiles.

