Knowledge, Power and Need in Disasters

Anti-personnel mines: 200 million disasters

In Cambodia, Praing Chloeun was taking her cattle out to graze, when she stepped on a mine, resulting in serious injuries to her legs. Her husband was forced to sell the family's animals to pay for medicines.

In northern Iraq, Ali Shaswa Ali from Penjwin was walking with his 12-year-old niece when a mine exploded. He lost his right foot, while she lost a foot and suffered serious facial and upper-body injuries. He had thought the area had been cleared of mines.

In Hargeisa, northern Somalia, a six-year-old child picked up an object which looked like the top of a thermos bottle. The explosion blinded him, scarred his face, destroyed his right hand, and left both knees so disabled that he is unable to walk.

The widespread and indiscriminate use of anti-personnel mines in the past 15 years has had, and will have for years to come, significant and life-endangering effects on civilians in post-conflict situations in numerous countries. As a "threat to humanity" and a critical humanitarian issue, the key points which characterise this disaster are that anti-personnel mines:

- cannot distinguish between civilians and combatants;
- cause unnecessary suffering to civilians;
- are indiscriminately used during conflict and have indiscriminate effects, particularly in post-conflict situations; and
- have major effects in post-conflict situations on civilians who stayed behind and on returning refugees and displaced people, putting them at serious risk of disabling injury or death, permanently affecting their societies and economies with the burden of large numbers of disabled people, immobilising large areas of agrarian and other lands or making them extremely hazardous to use, significantly raising the costs of reconstruction, and creating a climate of fear.

Before the withdrawal of Soviet forces from Afghanistan in the spring of 1989, civilian victims of mines in post-conflict situations were regarded as one of the "normal" consequences of war. As UN agency representatives began to visit that country to plan for Afghan efforts at rehabilitation, however, the enormity of the effects of the widespread and indiscriminate use of anti-personnel mines was quickly realised. Not only would the Afghan people be at severe risk when they sought to return to their villages but their way of life would be severely impaired.

Subsequently, as political settlements loomed in Cambodia and Angola, similar situations appeared, and the realisation spread that on a significant scale these problems affected many other countries.

The ICRC, which had been treating increasing numbers of military and, particularly, civilian victims of anti-personnel mines in conflict situations, sought to raise public and governments' awareness of the human, economic and social effects of their widespread use by convening a symposium on anti-personnel mines in 1993. In parallel actions, NGOs aimed to influence governments either to ban their production or export, or to

control them more effectively.

A recent authoritative study of 155 countries has revealed that 51 countries have post-conflict mine problems, threatening injury and death to civilian populations which may require international assistance in medical and/or de-mining services. Of these, nine countries suffer from a very severe threat: Angola, Ethiopia/Eritrea, Mozambique, Somalia/northern Somalia, Sudan, Afghanistan, Cambodia, Bosnia, and Iraq/Kurdistan. A significant threat is posed to 19 countries.

There is real potential for a rapid increase in the impact of anti-personnel mines in 10 to 12 countries. Ongoing conflict or the failure of peace talks suggest that this could well be the case in Angola, Liberia, Sudan, Afghanistan, Cambodia, Bosnia (and other parts of former Yugoslavia), Armenia/Azerbaijan, Georgia, Russia, and Tajikistan. Growing or ongoing insurgency in Colombia, Peru, and Myanmar could move in this direction as well. The rapidity with which anti-personnel mines can be obtained and spread is exemplified by the situation in Bosnia, where 1,500,000 mines are believed to have been placed within the first 18 months of the conflict.

A few of these problems with mines date back to both world wars or not-so-distant wars of independence, but most are of recent origin. Estimates of the worldwide number of anti-personnel mines settle out at 200 million, of which some 100 million are in place and 100 million are in stock. (While the subject of this analysis is victims of anti-personnel mines, it includes victims of other explosives of concern such as anti-tank mines, unexploded rockets, artillery shells, etc. and even devices such as the butts of used aerial magnesium flares which can ignite with the warmth of a hand.)

"Eternally vigilant" long after conflict has ceased, anti-personnel mines are located primarily in the developing world. Future generations will live in fear of mines, be killed or injured by them, and spend time, energy and resources trying to eliminate mines from their communities.

Mine use in conflicts

Within the military context of combat between states, anti- personnel mines were designed to maim and disable soldiers, thereby introducing an element of fear and terror among their compatriots and an additional logistical burden on the army. Conventional uses of anti-personnel mines are: to protect military bases and key installations; to channel or divert enemy forces; and to deny routes and strategic positions to the enemy.

Such uses lend themselves to the mapping of mine fields as required by internationally-accepted law. Recent modern warfare, however, has expanded their role in such a fashion that this practice no longer can be applied. Scatterable mines are remotely disseminated by fixed-wing aircraft, helicopters, artillery, rocket, or mortar either to strike deeply at the rear of enemy forces or cut off retreating forces, or stop advancing forces.

In such instances, the mines should have the capability either to self-neutralise or self-destruct but, more often than not, this is not the case.

Modern warfare, moreover, is usually an internal conflict in which armed government and opposition groups, often with outside backing, fight in guerrilla-type operations among a country's civilian population. Within this setting, the use of anti- personnel mines has rapidly evolved in ecent years beyond the original tactical and defensive military purposes. Today, such mines are often used as strategic weapons for the control of civilian populations through terror of painful, disabling injury or death and the denial of the normal means to obtain a livelihood, such as the growing of crops or the use of roads.

Coincident with this shift in the use of anti-personnel mines has been a rapid change in the materials for and design of anti- personnel mines. Plastics have largely displaced metal in their manufacture, in some instances there are virtually no metals used, so that many mines are to all intents and purposes, undetectable. In

Anti-personnel mines, 100 million of them worldwide, make no distinction between the footfall of a soldier or civilian, adult or child. Children in Cambodia often help by herding cattle The cattle tread on land-mines and the children, following behind, get the full impact in the chest and face Not only is indiscriminate use of mines in violation of the Geneva Conventions, it violates all standards of human behaviour.
Cambodia, 1990. Sebastiao Salgado/Magnum

size they can be as small as a man's hand, and they are cheap to produce: market rates for some mines are at US$6.00 per mine and even lower

Sixty private companies and governmental agencies in at least 37 countries manufacture mines, and 23 of these countries are exporters. While there are over 150 models of anti-personnel mines, they injure by either blast or fragmentation, with the latter often designed to bound into the air before exploding. Each category has its own characteristics, but their purpose is frequently to maim rather than to kill

Effects on civilians

Civilian victims of anti-personnel mines live almost wholly in the villages and countryside of the developing world. In those countries seized by conflict, many villagers have remained in place and tried to continue their way of life as combat has moved around and through their villages They have learned, by observation and bitter experience, where danger lies from anti- personnel mines. But even then, they cannot anticipate where every single, hand-sized mine may be. Not only can they not detect where any one mine might be buried but, over the months and years, rain, frost and other natural forces may have washed the mines out of their location and buried them elsewhere.

Statistical data on anti-personnel mines are very limited because, with the exception of the ICRC, few paid attention before 1989 to their effects on civilian populations in post- conflict situations. Enough exists, however, to gain a credible impression of the consequences

- In Peshawar, 85% of those injured by mine explosions were engaged in non-military activities, such as farming, travelling between villages or tending cattle. Returnees were 77% of the victims.
- ICRC's Kabul hospital statistics show that one-quarter of the victims were women and another one-quarter were children. (Children, defined as 14 years and under, are at particular risk in Afghanistan since they tend cattle in pastures.)
- In north-western Cambodia an authoritative study showed that 58% of the mine-injured were non-combatants. Of all non-combatant injuries, 45% occurred while collecting firewood or fruit in the forest. Women suffered 37% of their injuries while working in the fields.

Regarding amputees as a proportion of the total population, using ICRC figures as the basis for estimates, indicative rates, in several countries are· 1:236 Cambodians, 1:470 Angolans, 1:650 Somalis, 1:1,100 Ugandans, 1:1,862 Mozambicans, and 1.2,500 Vietnamese. In the United States in 1989, the rate of amputations on persons who had suffered traumatic injuries was 1:22,000.

In the ICRC's experience, three clinical patterns emerge from anti-personnel mine injures. Mines ignited by foot pressure, usually of the blast type, blow away the foot when the charge is small and, correspondingly, the lower leg or lower legs with a larger charge. Amputation is required and lesser injuries are treated. The remaining two patterns are characterised by multiple fragment wounds, caused primarily by fragmentation mines, and upper limb, chest and face damage caused by handling. Dirt and debris are deeply forced into the wounds, making treatment and surgery difficult.

Preventing deaths

Ideally, in post-conflict situations, anti-personnel mines and other unexploded munitions should be identified and disposed of safely. Customarily, in conventional warfare between states, countries which have used mines do not take responsibility for their disposal, even from mapped mine fields. It has been up to "host" countries to locate and dispose of the mines.

Since 1989, responsibility for mine clearance, or "de-mining", has shifted in large part to the United Nations, a new role for it and, so far, specifically related to developing countries In those countries, UN agencies have taken the lead in organising and administering de-mining programmes, using qualified private companies and local specialised NGOs to carry out the operations. (It should be noted

that neither "de-mining" nor "mine clearance" means the complete eradication of mines. Such clearing is only carried out with respect to essential locations such as primary roads.) A typical de-mining programme consists of four components: mine-awareness programmes; mine-clearance training; minefield survey, planning and management; and mine clearance.

Of these four phases, the last three phases are for professional staff experienced in the field, usually private firms under contract with the UN or governments. The Mines Advisory Group (MAG) and The Halo Trust, both from the UK, are the most well-known. In Afghanistan, specialised Afghan NGOs now carry out the larger part of this work. The Swedish Red Cross is associated with a de-mining project in Cambodia, but it is as contracting organisation only; the work is carried out by The Halo Trust. The Pakistan Red Crescent provides the first aid component in training courses held in Pakistan for de-mining teams active in Afghanistan.

Mine awareness programmes have been designed to teach people how to identify and avoid the dangers of mines and other explosive devices. They also encourages those who attend the training to widely disseminate mine awareness knowledge. Programmes are primarily aimed at refugees who, following the restoration of some peace and security in their countries, then wish to return to their homes.

Treatment of mine victims

The level of health services in rural areas of the developing countries is low. First aid is rudimentary and the inexpert application of tourniquets results in higher levels of amputations than necessary. Surgery is a demanding, time- consuming and expensive service, and existing medical facilities are poor and surgical skills limited. Blood services are inadequate or non-existent, an important factor in that twice as much blood is required for the mine-injured as, for example, those wounded by other weapons. All these factors lead to an additional loss of life and limbs.

Victims who have suffered the loss of a limb or limbs face an uncertain future and join the ranks of all disabled people. Culturally, young amputees in many societies, particularly young women, are not regarded as marriageable. Disabled people are frequently treated as outcasts, and may be reduced to begging or petty crime. One estimate in Cambodia is that only 20% of mine- injured amputees will be given employment opportunities. Replacement of the limb or limbs with protheses can be a

The top 10 anti-personnel mine-affected countries

Country	N° of anti-personnel mines sown (million)	GNP/capita (US$)
Afghanistan	9-10	280
Angola	9	610
Iraq	5-10	2,340
Kuwait	5	16,150
Cambodia	4-7	N/A
Western Sahara	1-2	950*
Mozambique	1-2	80
Somalia	1	150
Bosnia & Herzegovina	1	2,290
Croatia	1	4,440

**Figure for Morocco*

Most of the mine-affected countries are among the poorest in the world and will never be able to clear their land of the millions of active mines. The problem will remain for generations to come.

Source: UN and US State Department figures. 1993

key factor in permitting individuals to return to more normal ways of life. In Cambodia, for example, men can work again in rice fields, and it is often easier for people in urban locations to obtain work

Orthopaedic centres have been established to provide this service in a number of countries. They usually include living accommodation for amputees' use wile being fitted for prostheses, training facilities - for amputees in using prostheses and for local people as technicians and other staff - and a workshop to manufacture the prostheses. Initial international staffing is required to provide skilled prosthetists, technical staff and administrative leadership but training will reduce these needs often to the point when the centre is run by local staff only. More than one centre may serve a country and, in one instance, branch repair workshops are under consideration.

Of the international organisations active in providing prostheses to mine-injured amputees, the ICRC has had the longest and broadest experience, with 14 years working in this field. It now has 27 centres and workshops in 13 countries. National Red Cross and Red Crescent Societies are also active - the American Red Cross in Cambodia, The Netherlands Red Cross in Angola, the Norwegian Red Cross in Somalia, and the Swedish Red Cross in Angola. The Myanmar Red Cross provides support services to government centres through its branches. They identify amputees, register them for prostheses and arrange for their transportation to the centres The Norwegian Red Cross also assists amputees in Sri Lanka by supporting local organisations, particularly in Jaffna. (It should be noted that other National Societies have established orthopaedic units to serve amputees from other causes, for example, the German Red Cross in Armenia and the Mexican Red Cross in Mexico.)

Among NGOs, Handicap International (France) has centres in Cambodia, jointly with the American Friends Service Committee since 1982, and in Vietnam, Mozambique and Iraq (Kurdistan). The Vietnam Veterans of America (VVA) is active in Vietnam and Cambodia, and The Cambodia Trust (UK) as well.

The aims of these organisations are to provide prostheses at the lowest possible cost and to train local staff to serve and manage the centre. Their ultimate objective is to transfer the centres to government ministries or local organisations. Controversy has arisen among the NGOs and ICRC over the use of local or imported materials. Local wood and other products can be used, thereby lowering cost and avoiding the need for foreign exchange, but their durability and overall utility is questioned. The ICRC, based on its experience, is standardising its operations on the use of polypropylene for reasons of durability, ease of workmanship and re-usability of the material. Demand for prostheses in mine-impacted countries considerably exceeds supply

A decision to provide orthopaedic services, for example, by a National Red Cross or Red Crescent Society, would require a long-term commitment. In those countries heavily impacted by anti-personnel mines, there will be a long-time demand for these services owing to continuing post-conflict casualties. Further, prostheses need to be replaced, particularly on children as they grow. Local staff are capable of running the centres but thereconstruction of these war-ravaged societies will take years and local governments may not have the local and foreign financial resources to support the centres. ICRC experience shows that their costs vary widely according to individual country conditions. The magnitude of annual running costs of a centre without international staff is about CHF 500,000. In the start-up phase for one to three years, costs will be higher, up to twice that figure, including international staff.

Relatively little has been done to assist amputees to re-integrate into a country's society satisfactorily or to attempt to influence the greater acceptance of amputees by their society. The Netherlands Red Cross, under an International Labour Organisation (ILO) programme with fund-

ing from the European Community (EC), is running a pilot project in Angola to train amputees in tailoring. A prime problem, however, is that even with these skills, bankrupt economies provide few employment opportunities of any sort in the short term.

Economic effects

The effects of this vast number of anti-personnel mines on civilian populations impact not only the very lives of individuals but the economic and social structures of the societies in which they live. The countries most affected are also mainly rural and agricultural societies whose peoples, farmers and herders, lived largely on the subsistence level before the conflict and have been more impoverished by the warfare. Relying on their physical fitness for their livelihoods, they have difficult access to medical and orthopaedic facilities and are least able to afford the cost of both those services and the partial and the total loss of the means to make a living.

The magnitude of the impact of mines on a country's economy and society can be illustrated by a few examples. Observers believe that the three most serious public health hazards in Cambodia are malaria, tuberculosis and mine injuries. In Angola, thousands of hectares of agricultural land in the fertile Mavinga valley are largely abandoned owing to the widespread use of mines. In northern Somalia, wells and grazing fields were deliberately mined by government forces to kill and terrorise civilians believed to supporters of opposition groups.

De-mining is an expensive and limited programme Essential roadways and thoroughfares, urban areas, and water sources will be demined but, in general, not large areas of farming or grazing land. The technology of producing anti-personnel mines has clearly outrun the means to control it and, in fact, little research has gone into developing new means of detecting present day mines. Further, virtually no research has gone into calculating the actual costs, from de-mining operations to additional hospital beds, and the "opportunity costs", that is, the cost of lost production on mined farmland.

International efforts

These new developments in modern warfare have occurred despite the general principles of Protocols I and II of the 1977 protocols to the Geneva Conventions and the more specific United Nations "Inhumane Weapons Convention" and its Protocol II (1980) The use of anti-personnel mines as a method of warfare has been less and less in conformity with certain fundamental rules governing the conduct of conflict. These are: that the parties must distinguish between civilians and combatants; they are prohibited from attacking civilians and, therefore, must not use indiscriminate weapons; and they are prohibited from using weapons which are liable to cause excessive suffering. These principles have been grossly violated.

The rapidity with which this problem has grown led the ICRC to hold its 1993 symposium to examine the problem and issues and to discuss remedial action on the international level. The participants represented the whole spectrum of concerned organisations, from governments and the manufacturing sector to the NGO community and international agencies. Seven main topics were discussed: present use of mines by the armed forces of governments and by other armed groups; the mines trade with attention to manufacturers, exporters and importers; medical effects of mine explosions on human beings, survivor rehabilitation, and social consequences; key technical characteristics of anti-personnel mines regarding detectability and their self-destruction or neutralisation; de-mining techniques and their organisation; professional military views on the present use of anti-personnel mines and possible future control through technical means; and present international law relating to mines and its possible future development.

Just before the symposium, the ICRC and the Federation launched a joint call urging governments, manu-