BOSNIA AND HERZEGOVINA

Beginning with Marshal Tito's death in 1980 and accelerated with the collapse of the former Soviet Union, the Socialist Federal Republic of Yugoslavia (SFRY) divided into five different countries: Slovenia, Croatia, Bosnia and Herzegovina, The Federal Republic of Yugoslavia (Serbia and Montenegro), and the Republic of Macedonia.

These Balkan States have a complex history that extends beyond the scope of this report. For Bosnia and Herzegovina, however, background on events, armies, and peace treaties is needed as each have influenced the use and clearance of antipersonnel landmines in the country. The information is provided to help the reader appreciate the challenges that face individuals living and working in this multi-ethnic country controlled by two separate entity governments.[1]

In March 1992, Bosnia and Herzegovina declared its independence from the SFRY. Days later, fighting broke out and led to a war lasting over three and a half years. Armed hostilities officially ended in December 1995. During this period, nearly three million people were displaced and over 250,000 are reported dead or missing.[2] UNICEF estimates war wounded at approximately 170,000 people.[3] The war destroyed families, communities, infrastructure, and left the country littered with landmines and unexploded ordnance.

For the most part, hostilities during the war were conducted by three distinct armies: the Bosnian government army (ARBiH), the Bosnian Croat army (HVO) and the Bosnian Serb army (VRS). In the SFRY, all men were required to complete one year of military service in the Yugoslav People's Army (JNA). It can be assumed that many soldiers involved in the war had prior military training. JNA military doctrine relied heavily on the use of mines as a deterrent against invasion. Though engineering units were primarily responsible for these activities, all soldiers were taught mine warfare doctrine and techniques (laying, recording and neutralizing).

In March and May 1994, a peace agreement was mediated between the warring Bosnian Croats and the government of Bosnia and Herzegovina, and signed in Washington and Vienna. The Washington Agreement created the Federation of Bosnia and Herzegovina. Under the agreement, the combined territory held by the Croat and Bosniak forces was divided into ten autonomous cantons. The cantonal system was selected to prevent dominance by one ethnic group over another.

The General Framework for Peace in Bosnia and Herzegovina (also known as the Dayton Agreement) was signed on 14 December 1995. This agreement officially ended the war and, among other things, recognized that the country was comprised of two entities – the Federation of Bosnia and Herzegovina (hereinafter referred to as the Federation) and Republika Srpska (RS). It also established an Inter-Entity Boundary Line (IEBL) and a four-kilometer-wide Zone of Separation (ZOS) between the two entities. The IEBL was the front line when the war ended. Most minefields are found along the IEBL and within the ZOS.

To oversee treaty implementation, an Implementation Force (IFOR) of 60,000 troops led by the North Atlantic Treaty Organization (NATO) arrived in the country in early 1996. In December 1996, IFOR's duties were handed over to the NATO-led multinational Stabilization Force (SFOR). There are approximately 30,000 SFOR troops currently in the country. Among other duties, SFOR is responsible for training and supervising the demining teams for each entity army and helping to identify and assist with the destruction of weapon storage sites.

An additional body established to assist with legislation and treaty compliance is the Office of the High Representative. This office is instrumental in providing guidance and support for the government of Bosnia and Herzegovina in following not only the Dayton Agreement, but also the obligations outlined in the 1997 Mine Ban Treaty.

Mine Ban Policy

Bosnia and Herzegovina signed the Mine Ban Treaty on 3 December 1997. At the signing ceremony the government declared its intention to destroy its antipersonnel mine stockpiles and dismantle production facilities within four years.[4] The instrument of ratification was signed in Sarajevo on 29 August 1998 and deposited at the United Nations (UN) on 8 September 1998. A copy of the ratification document was provided to the Landmine Monitor.

Information about implementing legislation and reporting to the UN as required by Article 7 of the treaty was not readily available. It is believed that the Office of the High Representative (OHR) in Sarajevo is actively supporting BiH in this regard.

Bosnia and Herzegovina attended all the Ottawa Process meetings as a full participant and endorsed the Brussels Declaration but was absent from the UN General Assembly landmines resolution votes in 1997 and 1998.

Following the breakup of the SFRY, Bosnia and Herzegovina declared that it accepted the Convention on Conventional Weapons (CCW) on 1 September 1993 and was hence bound by its provisions, including the rules contained in Protocol II. BiH has not yet ratified 1996 amended Protocol II.

Production

During Tito's regime, the SFRY was one of the most prolific producers of landmines in the world. There were an estimated six million mines of all types in JNA stocks at the beginning of the conflict.[5] Other estimates are three million JNA mines stockpiled prior to the war and an additional three million mines acquired or made during the conflict.[6] Three mine-producing factories were identified in the towns of Gorazde, Vogosca and Bugojno.[7]

According to one expert: "Gorazde is one of many factories in the former Yugoslavia that were owned by UNIS, part of the Associated Metal Industry. They still produce a lot of detonators, now mainly for commercial rather than military use. They also made the Gorazde mines. There are two variants of the Gorazde AP mine, though both look like the Canadian C3 Elsie: one fires upwards and the other downwards. The latter is made for use in the Gorazde AT mine, which is just a wooden box with fuse wells for two AP mines."

"Vogosca is just north of Sarajevo and made, among other things, the ORKAN rocket systems that dispense KB-1 and KB-2 submunitions. They also had a substantial research and development facility where they were working on an electric AT mine called ABABEEL (the Iraqi designation)."

"Bugojno (Slavko Rodic Bugojno, known as SRB) is the big one; you will see the SRB factory mark (in English or Cyrillic) on quite a few Yugo mines. They made several types including PMA-3, MRUD, TMRP-6 and the MPR-M85 electronic limpet mine. They are also working on some new AP and AT mines with electronic fuses. Most of these factories were heavily damaged and now run between 10-20 per cent capacity. Some of the buildings are damaged or destroyed and many have no power."[8]

Another mine produced in the country was the Caplinka mine, a tripwire-operated fragmentation stake mine fabricated in the Mostar Region.[9]

Transfer

Reportedly, large numbers of SFRY-manufactured landmines were exported and have been found in Afghanistan, Cambodia, Mozambique, Namibia, and elsewhere.[10] There have been no reports of landmine import or export by Bosnia and Herzegovina since signing the Mine Ban Treaty in December 1997.

Stockpiling

The 1995 Dayton Agreement also includes specific obligations concerning the marking, removal and destruction of mines and unexploded ordnance (UXO). These are found in Annex 1A of the Agreement. Specifically, Article IV (2)(d) states: " The Parties immediately after this Annex enters into force shall begin promptly and proceed steadily to complete the following activities within thirty (30) days after the Transfer of Authority or as determined by the IFOR Commander: (1) remove, dismantle or destroy all mines, unexploded ordnance, explosive devices, demolitions, and barbed or razor wire from the Agreed Cease-Fire Zone of Separation or other areas from which their forces are withdrawn; (2) mark all known mine emplacements, unexploded ordnance, explosive devices and demolitions within Bosnia and Herzegovina; and (3) remove, dismantle or destroy all mines, unexploded ordnance, explosive devices and demolitions as required by the IFOR Commander."

Annex 1A Articles VI (3) (e) and VI (6) also gave IFOR, and its successor, the Stabilization Force (SFOR) the right to monitor the clearing of minefields and obstacles and the right to conduct spot-checks at any time and destroy any undeclared stockpiles.

COMSFOR's Instructions to the Parties (6 June 1997) required all Parties to declare the extent of their mine stockpiles and move them to officially agreed "cantonment" sites. The mines must remain at the sites and cannot be used or moved without SFOR permission.[11]

In December 1996, a conference was held in London to review the implementation of the Dayton Agreement. At that time BiH authorities were urged to formulate a plan to reduce antipersonnel mine stockpiles by 1 October 1997 and not acquire any additional mines.

At the signing of the Mine Ban Treaty, Bosnia and Herzegovina pledged to destroy its AP mine stockpiles within four years. There are an estimated 400 stockpiles in the country. Weapon storage sites contain a wide variety of munitions and are not exclusive to antipersonnel landmines. Information on the location of the sites is not available to the public.

The NATO-led Stabilization Force (SFOR) is involved with assessing the content of the weapon storage sites to identify the training needed to destroy existing munitions and promote safety in working near these areas. SFOR is also providing technical and financial assistance for the destruction of weapon storage sites. Though partial or complete destruction of some sites has occurred, specific information is not available to the public. The main method of destruction is reportedly by explosion.

Antitank (AT) mines, AP mines and UXO found during demining or clearance activities are destroyed. The BHMAC accredited figures for 1998 are given below:

AT mines cleared: 192
AP mines cleared: 3,597
UXO cleared: 2,192

There are no mines being retained for training purposes as appropriate training models are available.[12] Stockpiles of AP mines by other countries or non-state actors have not been identified.

Use

As noted above, all fighting factions used APMs during the war.

Other than rare sporadic use of AP mines on individual property areas, there are few allegations of relaid AP mines. The Jewish Cemetery in Sarajevo has had two incidents of AP mines found in previously cleared areas. Neither incident resulted in serious injury and the nature of these events is not entirely clear.

Landmine Problem

As a result of the war, the country is heavily polluted with landmines and unexploded ordnance (UXO). As of January 1999, the country's focal point for humanitarian demining Bosnia and Herzegovina Mine Action Center (BHMAC) reported 18,229 known minefields, of an estimated a total of 30,000 minefields in the country with 750,000 to one million landmines in the ground. Minefields can be found throughout the country, with concentrations along Inter-Entity Boundary lines. Some minefields follow military doctrine of the Yugoslav People's Army (JNA) but most are nuisance minefields. Of documented mines laid, the BHMAC reports that 83.55 percent are AP mines) and 16.45 percent are AT mines.

The United Nations Mine Action Center (UNMAC) was the UN-mandated agency established in BiH in June 1996 to coordinate demining activities in the country and supervise the establishment of national bodies to assume responsibility for mine action. It was the in Bosnia and Herzegovina.

As a result of concerns expressed during the London conference in December 1996 to review the Dayton Agreement about the lack of progress in mine clearance, the authorities in Bosnia and Herzegovina (BiH) were required to: use their military forces for demining in accordance with internationally recognized standards; assist the United Nations Mine Action Center (UNMAC) by providing data and assigning priorities to proposed demining projects; support the demining effort by exempting all aspects of mine clearance operations from taxes and customs duties.

On 15 October 1997, the Council of Ministers of Bosnia and Herzegovina and the United Nations signed a Memorandum of Understanding (MOU) concerning a national Mine Action Plan to address the problem of landmines. Under the MOU, all assets developed by UNMAC for the government of BiH and/or the entities are being progressively handed over to the Bosnia and Herzegovina Commission for Demining (BHCD). Handover of responsibility for mine action occurred on 1 July 1998.

The organizational structure for coordinated mine action in BiH is seen below.

Council of Ministers	
Board of Donors	
Bosnia and Herzegovina Commission for Demining (BHCD)	
Bosnia and Herzegovina Mine Action Center (BHMAC)	
Entity Mine Action Center (EMAC)	Entity Mine Action Center (EMAC)
(Federation)	(Republika Srpska)
Regional Offices: Mostar, Tuzla, Bihac, Sarajevo	Regional Offices: Banja Luka and Pale

The Board of Donors provides guidance to the BHCD, BHMAC and the EMACs. It also oversees the management of the United Nations Development Program (UNDP) Trust Fund that supports the BHMAC. Members include embassy representatives (Canada, Norway, Switzerland, USA, and Slovenia), UNHCR, World Bank and SFOR. The Board meets every 3-4 weeks and is co-chaired by OHR and UNDP.

The primary role of the BHCD is to oversee the work of the BHMAC. The BHCD also channels resources to the entity governments, which are responsible for implementing the Mine Action Plan, facilitate cooperation between the Federation and the Republika Srpska, and report on progress in mine action within the country. The BHCD is a three-member commission with representation from Bosnian Croats, Bosnian Serbs and Bosnian Muslims.

BHMAC has three main components: 1) information (collect and maintain mine related information, public relations); 2) finance (create financial reports, trace how funds are spent, write proposals); and 3) coordination (establish and impose standards for mine action, accredit qualified demining operations, coordinate demining tasks in the IEBL).

EMACs responsibilities include: 1) conduct mine awareness, demarcation, surveying and clearance operations; 2) provide information to the central minefield database; 3) coordinate demining activities with other operational agencies, ensuring they address approved priorities and meet approved standards; 4) propose a list of urgent tasks to be undertaken within the entity; 5) provide information to the central minefield database.

Mine Action Funding

The London Peace Implementation Conference in December 1996 stated the authorities in Bosnia and Herzegovina were to “support the demining effort by exempting all aspects of demining operations from taxes and customs duties.” As of 1 January 1999, employees of the MACs should receive health cards entitling the bearer to receive free medical treatment and pension provisions. The Federation has honored the commitment, but the RS has not yet done so. Tax exemptions do not apply to personnel employed by NGOs or commercial companies.[13]

From 1996-1998, ten major donor states (Belgium, Canada, Denmark, Germany, Italy, Japan, Norway, Switzerland, UK, and the United States) have reportedly provided US$35.66 million for mine action in Bosnia and Herzegovina.[14] What percentages were spent in the country for what actions is difficult to assess.

BHMAC records its own budget needs and expenses and any funds allocated through it for other operational agencies. BHMAC does not have records of independently funded demining organizations, mine awareness actions or the wide variety of victim assistance programs being implemented in the country.

The newly established Slovenia Trust Fund could provide up to US$56 million for mine clearance and victim assistance activities for BiH. This is through a matching fund offered by the United States with a cap of US$14 million per year for two years. The MOU between Slovenia and BiH has been signed; Slovenia has until December 1999 to raise the funds for the first year of the match.[15]

At present, the World Bank is supporting a US$30 million War Victims Rehabilitation Project. The project duration is two years and was to be effective in 1996. This project is located only in the Federation and has four main components: 1) Community Based Rehabilitation (CBR) (US$ 13.1 million) based in 38 poly-clinics located throughout the Federation; services offered include physical therapy, services for mental illness, and psycho-social rehabilitation. 2) Prosthetics and Orthotics Production (US$ 6.2 million) providing equipment,

materials and building rehabilitation for six prosthetic centers in the Federation (Cazin, Mostar, Sarajevo, Livno, Tuzla, and Zenica). 3)Orthopedic and Reconstructive Surgery (US$ 8.8 million) providing medical equipment and building rehabilitation in seven surgical departments in the Federation (Mostar, Livno, Travnik, Bihac, Tuzla, Sarajevo, and Zenica). 4)Project Implementation Support ($US 1.9 million) providing office equipment, vehicles, technical assistance and training.[16]

Survey Information

The three armies involved in the conflict had some training in mine warfare and generally employed JNA mine-laying methods. Mines were often used to protect front line positions and avenues of retreat. In BiH the front line was relatively stable and follows the IEBL and ZoS. The majority of mines are found in these areas and in areas surrounding many of the ethnic enclaves besieged during the war. Though many mines were laid by entity armies according to JNA military doctrine, records for all mined areas have not been found. Mined areas have been recorded but, for whatever reason, the reports were not submitted. It could be that the person who was in charge of laying the mines recorded the areas, but did not submit the report, or may have been killed before the report was submitted. Additionally, the report may have been submitted, but could have been destroyed during the war by the fighting.[17] Local militia groups and individuals also laid mines and reporting from these groups is minimal.

Following the end of the hostilities, IFOR/SFOR were given a large number of minefield records and maps by the entity armed forces. It is generally held that these maps represent 50-60 percent of the minefields in the country. BHMAC stores these records as well as positions of non-mapped minefields that are discovered. BHMAC's database in Sarajevo is the focal point for information related to mine locations and demining activities.

Though Bosnia and Herzegovina is considered a seriously mine and UXO-affected country, there has been no formal assessment (Level 1 Survey) of the extent of the problem. A Level 1 General Survey is planned for Bosnia and Herzegovina in 1999. This is contingent upon funding received by BHMAC. RS and Federation MAC survey teams already operational in the country will undertake the implementation of the survey. Results from the Level 1 Survey will supplement existing maps and information from demining agencies. It will also provide information about the kind of land that is mine-affected and the impact on the local community.

Specific Minefield Information

As of 25 January 1999, BHMAC recorded 18,229 minefields in the country. The current BHMAC estimate of the total number of minefields in BiH is 30,000. The BHMAC notes 290 square kilometers of ground are suspected to be mined. The summary of minefield records in the Federation and RS are provided below.

LOCATION	**MINEFIELDS**	**POPULATION**[18]
FEDERATION (by cantons)	**13,472**	**2,201,720**
Central Bosnia	2,125	252,617
Neretva	1,314	176,203
Posavina	408	38,666
Sarajevo	1,449	348,039
Tomislavgrad	768	78,750
Tuzla-Podrinje	3,196	615,673
Una-Sana	1,608	222,634
Upper Drina (Gorazde)	250	39,240
Zenica-Doboj	2,354	429,898
REPUBLIKA SRPSKA	**4,756**	**1,398,000**
UNKNOWN	1	
TOTAL	**18,229**	**3,599,720**

Types of Mines Laid

As of 25 January 1999, the BHMAC reports 247,419 AP mines and 49,994 AT mines laid in BiH (AP 83.55 percent and AT 16.45 percent):

AP Mine Type (Number)
PMA 1 1A (18,950)
PMA 2 (30,587)
PMA 3 (40,503)
PMR 2A AS (86,527)
PMR 3 (2,890)
PROM 1 1P (11,852)
MRUD (8,253)
Other AP (10,522)
Unknown (37,488)
TOTAL (247,419)

AT Mine Type (Number)
TMM 1 (7,592)
TMA 1 1A (1,031)
TMA 2 2A (533)
TMA 3 (7,730)
TMA 4 (6,118)
TMA 5 (1,427)
TMRP 6 (12,015)
Other AT (3,672)
Unknown AT (9,876)
TOTAL (49,994)

Minefield Marking and Mine Awareness Education

Clear marking of minefields and education about the risk of landmines are two methods used in preventing additional injuries from landmines. At this time, minefield marking is carried out by demining teams only for areas that are in process of being cleared. Other than marking at clearance sites or possible initiatives within a community, there is no preventative marking to ensure effective exclusion of civilians from mined areas.[19] The most common marking technique is to line the periphery of the area in question with red or yellow minefield tape, commonly known as police tape. “Mines” (written in black) is printed on the tape. Until now, a technical survey of a suspected mined area is directly followed by clearance activities. There have been no reports of a technical survey being followed only by marking of the minefield and leaving it without further action.

There is an extensive mine awareness program functioning at many levels in Bosnia and Herzegovina. Main actions and implementing bodies include: ICRC; Ministry of Education in both entities (with financial and technical support from UNICEF); BHMAC, EMACs and Mine Awareness Working Groups (MAWGs); and SFOR mine risk education for SFOR troops arriving in the country.

The International Committee of the Red Cross (ICRC) began mine awareness programs in BiH in March 1996. At present, ICRC has eleven sub-delegations in the country with eleven mine awareness officers. For direct community level activities (data collection and mine awareness) ICRC has recruited 122 Red Cross volunteers from the approximate 100 municipalities in the country. The volunteers/mine awareness instructors live in the mine-affected areas and work within the community in which they live. The long term plan is to hand over all activities to the local Red Cross structures.[20]

There are four components to ICRC’s mine awareness program. community based approach (targeting adults, made by Red Cross volunteers); school program (children are targeted, drawing contests, compulsory mine awareness lessons, quiz competitions and puppet shows); media campaign (television, leaflets, radio used in early emergency phase); data gathering activities (collect information related to mine incidents to help monitor the impact of the mine awareness program and identify further needs).[21]

UNICEF became involved in mine awareness in Bosnian and Herzegovina in 1997. The most notable achievement is the collaborative work between UNICEF, UNHCR, ICRC and the Ministries of Education in the Federation and the RS in providing mine awareness education as a part of primary school curriculum throughout the country. Information is provided as part of a weekly one-hour open education period. As of 1998, both Ministries of Education have designated staff (two in the Federation and one in the RS) to work full-time for mine awareness education.

Teacher training to introduce mine awareness in the school system started in 1997 in the Federation and in the RS in 1998. The program followed a train the trainer method whereby all primary school teachers should have received training through original teacher trainers. There are over 6,900 primary school teacher in the RS and more than 12,300 primary school teachers in the Federation.[22] All are assumed to have received teacher training for providing mine awareness education.

There are an estimated 266,918 primary school students in the Federation and 117,952 primary school students in the RS.[23] All students should have received mine awareness training in their schools.

UNICEF continues to provide Mine Awareness Kits for the school program which include posters, leaflets, stickers, student timetable, teacher's manuals, audio tape, video tape, jigsaw puzzle and three simple board games. In addition to the primary school program, UNICEF also supports: a mobile theater group providing mine awareness information in the cantons of Zenica, Gorazde, Tuzla, and Una Sana; provision of soccer balls and information materials to promote mine awareness in soccer clubs in both entities (started by the Spirit of Soccer and taken over by the Ministry of Sport in the Federation and RS).[24]

The first Mine Awareness Working Group (MAWG) started in May 1996 under UNMAC authority. This group developed mine awareness information standards that are generally followed in Bosnia and Herzegovina. Currently, each EMAC has a MAWG that meets regularly to improve coordination and share information among agencies and ministries involved in mine awareness. The groups also help prioritize needs for future mine awareness in their entities. The EMACs are also involved in directly providing mine awareness through trained mine awareness instructors.

Each multinational division (MND) in SFOR provides mine risk education to troops arriving in Bosnia and Herzegovina. Proper training of foreign staff working in a mine-affected country is important but often overlooked. The British SFOR division has a rigorous mine risk education program that requires monthly mine awareness training. The MND-North and Southwest divisions also give mine awareness to schools, community centers and clubs in their areas of operation.

Additional organizations involved in mine risk education programs include: 5+; Amphibia; Associacione dei Bambini; Association to Aid Refugees Japan (AARJ); GENESIS; Handicap International (HI); IPTF; Japan Emergency NGOs (JEN); Kreigs Kinder Not Hilfe; Landmine Survivors Network; MEDEX; Ministry of Sport in both entities; Norwegian People's Aid (NPA); Pisac.[25]

Mine Clearance

There are five main categories of officially recognized operators directly involved mine clearance efforts in Bosnia and Herzegovina.[26] These include commercial companies (international and local companies bidding for contracts, focus on infrastructure, most of the work funded by the World Bank); nongovernmental organizations (NPA, HI/APM, HELP); former warring factions (43 demining teams from the three entity armies; seven additional teams added; roughly 450 personnel doing demining); MAC teams (four teams – two RS and two Federation); and UNHCR teams (six teams – two RS and four Federation). Civil and Protection Organizations (RS and Federation) have teams specializing in Explosive Ordnance Disposal and house clearance.

Official demining activities began in 1996. There were few demining organizations at that time and progress was slow. There were no demining standards in place and much of the demining was "mine lifting" (clearing only the mines indicated on the map) rather than demining to humanitarian mine clearance standards.[27]

BHCD now requires any demining service to be accredited by BHMAC prior to receiving approval to work in the country. The three former warring factions are accredited and now conduct all demining according to humanitarian mine clearance standards. The UNHCR and MAC demining teams have also been accredited. For 1999, there are over forty organizations applying for accreditation to conduct demining in BiH.

As of January 1999, are nineteen organizations were accredited by BHMAC for demining operations in Bosnia and Herzegovina: Amphibia; Defense Systems Ltd (UK); Detektor; EMERCOM (Russia); FFG (Germany); GEOMINES (France); Handicap International (France)/APM Bihac; HELP-UDT (EU/Local); Lenz UKB (Germany/Hungary); MECHEM (S Africa); MINE-TECH (Zimbabwe); Norwegian People's Aid; Oktol; RONCO (USA); TAMAR Consulting (Germany); TWJ Demining; UXB (USA) and UNIPAK.

The demining employees are primarily local staff. Training for staff is generally provided by foreign experts. SFOR provides training and supervision for the entity demining teams, NGO's train their own staff, and the MACs also provide training for their teams. Sufficient security to mine action personnel is assured through the accreditation process.[28]

All records for mine survey and clearance are available at the BHMAC information center in Sarajevo.[29] These records are accessible and open to the public. Specific figures for 1996 were minimal. The BHMAC information center initially reported the total amount of land cleared and surveyed (area checked for mines but none were found) to humanitarian standards in 1997 was 6,833 square kilometers and in 1998 was 4,733 square kilometers. (A breakdown per month is available).

However, the figure for the total area cleared during 1997 has now been revised downwards from 6,833 sq km to 4,623 sq km. This revision is the result of an investigation that revealed monthly progress reports submitted to the UNMAC by all operators that did not match the figures entered into the national mines database from compilation reports submitted by accredited operators.[30]

The BHMAC also explains the figures for mines located/destroyed in 1998 are significantly less than figures for 1997. The BHMAC believes that this is due to a change in clearance from the three military teams doing mine lifting in 1997 and began clearance in accordance with international standards in 1998.[31]

According to BHMAC information center, the following is the breakdown of square meters surveyed and cleared according to land use. These are the total to date.

TYPE OF LAND USE	SURVEYED (m2)	CLEARED (m2)
Airports	261,512.50	21,581.00
Bridges	37,815.00	262,320.00
Communications	--	11,435.00
Education and Culture	12,417.00	150,863.00
Electric Power & Coal	286,904.00	1,184,509.00
Housing	374,903.00	1,262,622.50
Natural Gas/District Heating	32,000.00	101,682.00
Other	1,077,290.00	1,770,559.10
Railways	405,825.00	124,267.00
Roads	60,253.00	385,827.00
Urban	-	14,230.00
Water/Waste Management	46,997.00	937,777.00
TOTAL	2,595,916.50	6,226,672.60*

Depending on the type of terrain and clearance method used, mine clearance cost estimates range from 3-20DM per m2 (in US dollars: $1.76 - $11.76 per m2).[32] Priority lists are based on what cantons and aid agencies want done. EMACs collect this information, develop priority lists and work with operators in the entities to undertake these actions. Priority lists must be approved by the concerned entity. Specific priority lists were not readily available to the Landmine Monitor researcher. There are no apparent obstacles to the mine clearance program and there appears to be a good level of cooperation among government agencies, UN groups and clearance organizations.

Landmine Casualties

Information about landmine casualties is collected directly from mine-affected communities (ICRC, local Red Cross, and other organizations involved in mine-related action), hospitals and health centers, local institutions for war disabled, police and military. Information pertaining to mine incidents or victims is electronically stored on the ICRC database and the BHMAC database.

ICRC Data

From 1 January 1992 through 31 December 1998, the ICRC registered 3,885 mine victims (those injured or killed by landmines). There has been a progressive decrease in the number of mine victims in the country with monthly averages of 56 victims from 1992-95 falling to a monthly average of 5.5 victims at the end of 1998. (This number could increase due to delays in reporting.)

Period	Number of Victims	Monthly Average
Jan. 1992 – Dec. 1995	2,699	56
Jan. 1996 – Dec. 1996	580	49
Jan. 1997 – Dec. 1997	274	23
Jan. 1998 – May 1998	96	16
June 1998 – Dec.1998	37	5.5
TOTAL	**3,686** [33]	**44**

Information about location of mine accident, type of injury, age/gender of victim, and military/civilian status are compiled from data collected through 31 May 1998.

Location of mine accidents Number of Victims

Bijeljina (RS) 633
Banja Luka (RS) 611
Una-Sana (Federation) 452
Tuzla (Federation) 302
Zenica-Doboj 301
Pale (RS) 295
Trebinje (RS) 275
Sarajevo (Federation) 253
Bosnian-Podrinje (Federation) 145
Neretvian (Federation) 86
Zupanja (Croatia) 1

Since the end of the war, the most mine-affected areas in terms of the number of mine and UXO victims are as follows:

Sarajevo 180 victims
Tuzla 165 victims
Banja Luka 138 victims
Zenica-Doboj 120 victims
Una-Sana 99 victims
Central Bosnia 82 victims
Bijeljina 71 victims
Pale 30 victims
Neretvian 26 victims
Bosnian-Podrinje 22 victims
Trebinje 16 victims

The age breakdown for victims:

0-5 years 14
6-10 years 95
11-18 years 317
19-25 years 619
26-35 years 1,017
36-45 years 712
46-60 years 396
over 60 119
N/A 360

While more than 80 percent of the victims were military during the war, this proportion reversed at the end of the conflict with more than 90 percent of victims identified as civilians. Since the end of the war, women represent less than 10 percent of mine victims.

From January 1996 to April 1998, 30-40 percent of the injuries or deaths were due to improvised munitions and UXO. Since January 1996, almost half the victims (40 percent) have had to undergo amputation of one or

more limbs, 40 percent suffered crippling injuries, such as being blinded, and 20 percent of the victims died as a result of their injury.

Surprisingly, the number of fatal injuries increased in 1997 and 1998. ICRC explains this may due to the rise in injuries by UXO and IED, and by the greater length of time needed to reach a hospital (during the war, field hospitals were set up behind the front line).

BHMAC Data

BHMAC has information on mine accidents involving demining personnel and a summary of general mine incidents in BiH. Mine Accidents involving demining organization personnel from January 1996 to January 1999 are provided below.

Type of Organization	Killed	Serious Injury	Minor Injury
Civilian Organization	9	15	10
Former Warring Factions	7	12	10
Unknown	3	11	0
TOTAL	19	38	20

LOCATION	KILLED	SERIOUS	MINOR
FEDERATION (by cantons)	147	423	157
Central Bosnia	14	65	17
Neretva	2	14	19
Posavina	4	8	2
Sarajevo	24	68	31
Tomislavgrad	2	12	7
Tuzla-Podrinje51	103	28	
Una-Sana	15	38	24
Upper Drina (Gorazde)	3	20	4
Zenica-Doboj	32	95	25
REPUBLIKA SRPSKA	113	213	81
UNKNOWN	8	7	16
TOTAL	**268**	**643**	**254**

Other Organizations

Other organizations having detailed information about mine victims are Landmine Survivors Network (LSN) and Jesuit Refugee Service (JRS). LSN has 460 in-depth interviews with landmine survivors and a registry of 200 additional survivors in the LSN database.[34] JRS works directly with 157 victims of landmines and houses specific information about these cases within their organization.[35] Both of these nongovernmental organizations will be described in more detail in the survivor assistance section of this report.

Survivor Assistance

There are an estimated 7,000 amputees in Bosnia and Herzegovina (4,500-5,000 in the Federation and 2,000-2,500 in Republika Srpska).[36] Amputation may be the result of a landmine injury or due to other causes.

As of 1997, the were 27 hospitals in the country capable of performing amputations (12 hospitals in the Federation and 15 in Republika Srpska).[37] There are a large number of health centers and general hospitals located throughout the country. The level of care and conditions within these facilities are extremely varied.

For rehabilitation and prosthetic facilities the Ministry of Health in each entity is primarily responsible. There are thirty eight poly-clinics located throughout the Federation that offer physical therapy. This is under the World Bank War Victims Rehabilitation project. Concrete actions of material provision, building rehabilitation and training were seen in early 1998. The individual responsible for project implementation is Goran Cerkez. Queens University (Canada) is providing technical assistance for the physical therapy component.[38]

Nearly all prosthetic centers in BiH are under the Ministry of Health; there is one private center, Merhamet, in Sarajevo. In the RS there are three main prosthetic center locations: Banja Luka, Trebinje and Srbinje. In the Federation, centers are located in Vitez, Sarajevo (Neretva), Tuzla, Zenica, Cazin, and Livno. One center in Mostar and a center to replace Neretva in Sarajevo are under construction under the World Bank project.[39]

Though there are a large number of governmental and non-governmental organizations involved in these areas, they are far too numerous to mention. A general directory of organizations working in Bosnia and Herzegovina can be found at International Council of Voluntary Agencies (ICVA) in Sarajevo. It is produced annually and is organized according to region and work sector. Landmine Survivors Network will be working on a specific Rehabilitation Directory for Bosnia and Herzegovina and should be available by mid-1999.[40]

The main international organizations working with landmine survivors are:

Austrian Red Cross (Banja Luka) is supporting over sixty victims of landmines with provision of prostheses. Prosthetic equipment and materials are donated to the main prosthetic center in Banja Luka and this center will, in turn, provide prostheses for the cases designated by Austrian Red Cross.[41]

Jesuit Refugee Service (Bihac, Banja Luka, Tuzla, Bjeljina, Zenica, Sarajevo, Pale, Gorazde, Trbinje and Mostar) has a comprehensive program for mine victims (generally under age eighteen when injured) throughout BiH. The program has four main components:

- medical: prosthetics and rehabilitation, medical kit;

- material: food parcels, house repair, clothes, scholarships;

- legal: housing rights, rights of civil victims of war and the disabled:

- psychosocial: summer and winter camps, occupational (youth clubs), and therapeutic (direct visits and psychological counseling jointly with HI).[42]

Handicap International (Bihac, Banja Luka and with JRS) supports widely varied activities in BiH. In Una Sana Canton, HI supports a local demining organization (APM) and will begin a teacher training for primary school teachers to ensure mine awareness information in well understood. In Banja Luka, HI provided an upgraded training for orthotics and is involved in and AIDS program. HI works jointly with JRS to provide psychological support to mine victims through use of “expert teams” (French and local psychologists).[43]

ICRC (all country) though not regularly involved in direct victim assistance activities, ICRC provides support through information sharing with other organizations, logistical support as able and mine awareness education.[44]

Landmine Survivors Network (Banja Luka, Bihac, Bugojne, Mostar, Trebinje, Doboj East and Tuzla Podringe) has engaged seven landmine survivors as outreach workers to conduct all LSN’s activities. Services offered by LSN are referral, peer support and hospital visitation, direct support for prosthetics, education, house repair, food parcels and income generation activities.[45]

National disability laws do exist in Bosnia and Herzegovina but the content and application vary between cantons and between the Federation and the RS.[46]

Notes

[1]According to the last census in 1991, the population of Bosnia and Herzegovina (BiH) was 4,209,308 citizens of whom 43.7 percent identified themselves as Bosnian Muslims (known since the war as Bosniaks), 31.3 percent as Bosnian Serbs, and 17.3 percent as Bosnian Croats. A further 7.7 percent were either of other ethnic origins or identified themselves as Yugoslavs.

[2]The World Bank, Bosnia and Herzegovina: Toward Economic Recovery, 1996.

[3]UNICEF, Bosnia and Herzegovina Women and Children Situation Analysis 1998, p. 3.

[4]ICRC and UNHCR, The Silent Menace/Landmines in Bosnia and Herzegovina, 1997, p. 12.

[5]MAG and The Cooperative Bank, Bosnia and Herzegovina, 1997, p.2.

[6]ICRC and UNHCR, The Silent Menace, p. 15.

[7]E-mail exchange from Colin King to David Crenna, 18 February 1999.

[8]Ibid.

[9]E-mail exchange from David Armitt to LM researcher, 1 February 1999.

[10]Jane's Information Group Special Report, Trends in Landmine Warfare, July 1995.

[11]ICRC and UNHCR, The Silent Menace, p. 14.

[12]Interview with SFOR official, Sarajevo, 29 January 1999.

[13]E-mail correspondence from Peter Isaacs to LM researcher, 12 March 1999.

[14]Zahabia Adamaly, Sunil Gupta and Vibeke Hjortlund, A Matter of Mines: Living with Them and Paying the Bill.

[15]Interview with Peter Isaacs, Sarajevo, 29 January 1999.

[16]World Bank Information Brochure, Projects Supported in BiH, 1998.

[17]E-mail exchange from Dave Armitt, 1 February 1999.

[18]UNHCR figures at 31 August 1997 (statistics provided by entity authorities).

[19]Interview with Peter Isaacs, 29 January 1999.

[20]Interview with Mirsada Hodges, Sarajevo, 27 January 1999.

[21]Ibid.

[22]UNICEF, BiH Situation Analysis, 1998, pp. 55-56.

[23]Ibid.

[24]Interview with Esperanza Vives, Sarajevo, 28 January 1999.

[25]List of organizations was based on MAWG participant lists in each entity.

[26]Interview with Peter Isaacs, 29 January 1999.

[27]Ibid.

[28]Interview with Zoran Grujic, Sarajevo, 28 January 1999.

[29]BHMAC information officer, Zoran Grujic provided documentation noting official BHMAC figures given in this report.

[30]E-mail from Zoran Grujic (BHMAC) to LM Researcher, 10 March 1999.

[31]Ibid.

[32]Interview with Peter Isaacs, Sarajevo, 28 January 1999.

[33]This number is different from the 3,885 total reported cases as mine incidents continue to be recorded. The last comprehensive update of the ICRC mine victim database was 31 May 1998.

[34]Interview with Plamenko Priganica, Tuzla, 30 January 1999.

[35]Interview with Pierre Girardier, Sarajevo, 27 January 1999.

[36]ICRC and UNHCR 1997 report, The Silent Menace/Landmines in Bosnia and Herzegovina, p.43; Interview with Goran Cerkez, Sarajevo, 28 January 1999.

[37]ICRC and UNHCR report, p. 43.

[38]Interview with Goran Cerkez, 28 January 1999.

[39]Ibid.

[40]Interview with Plamenko Priganica, 30 January 1999.

[41]Ibid.

[42]Interview with Pierre Girardier, 27 January 1999.

[43]Interview with Karen Perrin, Sarajevo, 28 January 1999.

[44]Interview with Mirsada Hodges, 27 January 1999.

[45]Interview with Plamenko Priganica, 30 January 1999.

[46]Interview with Pierre Girardier and Valerie