

## MINE ACTION

### 1999–2009 Overview

Since the entry into force of the Mine Ban Treaty in 1999, at least 1,100km<sup>2</sup> of mined areas and a further 2,100km<sup>2</sup> of battle areas have been cleared in more than 90 countries and other areas.<sup>1</sup> Operations have resulted in the destruction of more than 2.2 million emplaced antipersonnel mines, 250,000 antivehicle mines, and 17 million explosive remnants of war (ERW).

In 2008 alone, mine action programs cleared almost 160km<sup>2</sup> of mined areas, the highest total ever recorded by Landmine Monitor. In May 2009, **Tunisia** formally declared that it had completed its clearance obligations under the treaty, the eleventh State Party to do so. The 10 others are Bulgaria, Costa Rica, El Salvador, France, Guatemala, Honduras, FYR Macedonia, Malawi, Suriname, and Swaziland.<sup>2</sup>

#### Key Mine Action Terminology

A **mined area** contains antipersonnel or antivehicle mines or a mix of the two; such areas often also include items of unexploded ordnance (UXO).

A **battle area** is an area of combat affected by ERW but which does not contain mines. ERW includes both UXO and abandoned explosive ordnance.

**Battle area clearance** may involve only a visual inspection of a suspected hazardous area by professional clearance personnel, but is more often an instrument-assisted search of ground, i.e. using UXO detectors.

**Clearance** of mined areas refers to physical coverage of an area to a specified depth using manual deminers, mine detection dogs, and/or machines to detect and destroy (or remove for later destruction) all explosive devices found.

**Land release** means release of contaminated land through survey or clearance.

**Survey** in mine action means a formal process to identify areas containing mines or ERW.

**Suspected hazardous area** means an area suspected—but not confirmed—to contain mines and/or ERW.

Yet significant challenges remain in the ongoing struggle against landmines. Mine-affected states are required to clear all antipersonnel mines from mined areas under their jurisdiction or control within 10 years of becoming party to the Mine Ban Treaty.<sup>3</sup> The first deadlines expired on 1 March 2009, but 15 States Parties with 2009 deadlines failed to meet them and were

<sup>1</sup> “Other areas” are distinct areas or regions with a specific mine or ERW threat but which are not—or only partially—internationally recognized as states: Abkhazia, Kosovo, Nagorno-Karabakh, Palestine, Somaliland, Taiwan, and Western Sahara.

<sup>2</sup> Fulfilling the requirements of Article 5 does not mean that a country is “mine-free,” a status that very few countries actually achieve. It is a statement that all known mined areas have been cleared of antipersonnel mines to humanitarian standards, and that all reasonable efforts have been made to identify all mined areas within a state’s jurisdiction or control. Thus, a small residual mine threat may be believed to exist even after a declaration of compliance with Article 5 has been made thus requiring the affected state to maintain the capacity to deal quickly with any residual contamination that may be discovered.

<sup>3</sup> Jurisdiction means sovereign territory while control of territory means areas occupied by a state outside its sovereign territory.

granted extensions.<sup>4</sup> In 2009, four more States Parties (three with 2010 deadlines and one, **Uganda**, whose deadline expired on 1 August 2009) formally requested extensions for periods ranging from three to 10 years.<sup>5</sup> By contrast, at the First Review Conference of the Mine Ban Treaty in 2004, States Parties pledged that by the Second Review Conference in 2009 “few, if any, States Parties” would require an extension to their treaty deadlines.<sup>6</sup>

## Scope of the Problem

---

With the Mine Ban Treaty already in force for 10 years, a reliable determination of the size of the global landmine problem still does not exist. Early estimates of the numbers of mines laid were merely speculative and often proved to be wildly inaccurate. Similarly, surveys, particularly some Landmine Impact Surveys (LIS), have overestimated the size of contaminated areas. Nonetheless, a more accurate understanding of the extent of contamination in both mined areas and battle areas does now exist, with many earlier estimates reduced significantly, largely as a result of more widespread land release procedures.<sup>7</sup>

### Mine contamination

As of August 2009, more than 70 states were believed to be mine-affected, as well as seven areas not internationally recognized (see table below). In the past year Landmine Monitor has removed two states from the list: the **Gambia** and **Tunisia**.<sup>8</sup> Although any estimate should be treated with caution, Landmine Monitor believes that less than 3,000km<sup>2</sup> of land worldwide<sup>9</sup> was mine contaminated as of August 2009. Increasingly, data gathering efforts are—rightly—seeking to define more accurately the perimeters of suspected hazardous areas (SHAs)<sup>10</sup> and to ensure there is sufficient evidence of contamination for these SHAs to be entered into national mine action databases.

---

<sup>4</sup> In accordance with the treaty, BiH, Chad, Croatia, Denmark, Ecuador, Jordan, Mozambique, Nicaragua, Peru, Senegal, Thailand, the UK, Venezuela, Yemen, and Zimbabwe all made requests for an extension to their Article 5 deadlines ranging from one to 10 years, the maximum period permitted for any extension period (though more than one extension period can be requested). All of these requests were granted by the Ninth Meeting of States Parties in Geneva in November 2008.

<sup>5</sup> These four states are: Argentina, Cambodia, Tajikistan, and Uganda.

<sup>6</sup> Nairobi Action Plan, Action #27, “Final Report of the First Review Conference,” 29 November–3 December 2004, APLC/CONF/2004/5, 9 February 2005, p. 99.

<sup>7</sup> Land release encompasses the range of techniques that ensure the efficient release of formerly suspect mined or battle areas other than purely by clearance, particularly technical survey. In addition, non-technical survey and database clean-up can lead to the cancellation of SHAs that are not in fact contaminated.

<sup>8</sup> The Gambia has been removed from the list as there is no evidence of residual contamination following an accident in December 2007. Tunisia has a residual threat from mines laid by NSAGs, but has reported completing clearance of all confirmed mined areas. Zambia has not yet been removed from the list although a nationwide survey of contamination had not found any mined areas as of August 2009 as it has still formally to declare completion of its Article 5 obligations.

<sup>9</sup> An area roughly the size of Luxembourg.

<sup>10</sup> According to the IMAS on land release, a SHA refers to “an area suspected of having a mine/ERW hazard. A SHA can be identified by an impact survey, other form of national survey, or a claim of presence of explosive hazard.” UN Mine Action Service (UNMAS), “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009, p. 1. Often, these are very rough estimates represented by a large circle in the national database that overestimates the size of a SHA. In Afghanistan, for example, the results of polygon surveys—more accurate delineation of the perimeter of a SHA—by HALO in its area of operations in 2007 prompted the Mine Action Coordination Center of Afghanistan (MACCA) to plan such surveys in most of the rest of the country in 2008–2009. MACCA reported in April 2009 that polygon surveys had resulted in a 9% reduction in the total estimated SHA. Email from MACCA, 31 March 2009; and see *Landmine Monitor Report 2008*, p. 86.

Mine-affected states and other areas as of August 2009<sup>11</sup>

Africa	Americas	Asia-Pacific	Europe	Commonwealth of Independent States	Middle East and North Africa
Angola	Argentina	Afghanistan	Albania	Armenia	Algeria
Burundi	Chile	Cambodia	Bosnia and Herzegovina (BiH)	Azerbaijan	Egypt
Chad	Colombia	China	Croatia	Georgia	Iran
Congo, Democratic Republic of the (DRC)	Cuba	India	Cyprus	Kyrgyzstan	Iraq
Congo, Republic of	Ecuador	Lao PDR	Denmark	Moldova	Israel
Djibouti	Nicaragua	Myanmar	Greece	Russia	Jordan
Eritrea	Peru	Nepal	Montenegro	Tajikistan	Lebanon
Ethiopia	Venezuela	Korea, North	Serbia	Uzbekistan	Libya
Guinea-Bissau		Korea, South	Turkey	Abkhazia	Morocco
Mauritania		Pakistan	United Kingdom	Nagorno-Karabakh	Oman
Mali		Philippines	Kosovo		Syria
Mozambique		Sri Lanka			Yemen
Namibia		Thailand			Palestine
Niger		Vietnam			Western Sahara
Rwanda		Taiwan			
Senegal					
Somalia					
Sudan					
Uganda					
Zambia					
Zimbabwe					
Somaliland					
<b>21 states, 1 area</b>	<b>8 states</b>	<b>14 states, 1 area</b>	<b>10 states, 1 area</b>	<b>8 states, 2 areas</b>	<b>12 states, 2 areas</b>

<sup>11</sup> This table includes states and other areas with confirmed mined areas. States with a residual mine problem are not included, such as Belarus, Honduras, Kuwait, Poland, Ukraine, and, since its declaration of compliance with Article 5, Tunisia. The precise extent to which the Republic of the Congo, Mali, Moldova, Namibia, Niger, Oman, and the Philippines are mine-contaminated remained unclear as of August 2009. Both Argentina and the UK claim sovereignty over the Falkland Islands/Malvinas, which are mine-affected, and so both are included in the list. It is believed that both Djibouti and Montenegro have completed mine clearance, but this has not been formally confirmed so they remain on the list. Affected areas not internationally recognized as states are in italics.

## Mine Clearance

---

Advances are being made in demining efficiency<sup>12</sup> with standard mine clearance tools that are rudimentary but practical. The primary clearance technique remains the manual deminer equipped with a metal detector proceeding slowly along one-meter-wide lanes. When a signal is heard, the deminer must stop and either the deminer or a colleague must carefully excavate the object to determine if it is an item of explosive ordnance or a harmless piece of metal. The overwhelming majority of signals lead to innocuous metal fragments being discovered (e.g. nails, barbed wire, and tin cans).<sup>13</sup> This painstaking process—repeated thousands of times a day around the world—is why mine clearance is expensive and time consuming.<sup>14</sup> The key to cost efficiency is minimizing the overall area to be cleared through good initial survey and ongoing refinement of the clearance plan for a minefield.<sup>15</sup>

Other demining tools—especially mine detection dogs (MDDs)<sup>16</sup> and machines—are widely used in mine action programs, particularly to contribute to more efficient land release rather than as a sole clearance tool.<sup>17</sup> In **Rwanda**, for example, Norwegian People's Aid (NPA) redeployed a MineWolf machine from its Sudan program in August 2008 to prepare approximately half a square kilometer of mine-suspected land for manual clearance by National Demining Office demining teams. At the end of the project in December 2008, the use of the machine meant that only 15,303m<sup>2</sup> (3% of the SHA, equivalent to about three football fields in size) needed to be physically cleared.<sup>18</sup>

### Clearance in 2008

Despite continuing problems in distinguishing true mine clearance from release by survey, Landmine Monitor believes at least 158km<sup>2</sup> of suspected mined areas were cleared in 2008,<sup>19</sup> resulting in the destruction of 476,875 antipersonnel mines and 99,466 antivehicle mines.<sup>20</sup> Greater precision is not possible due to the poor quality of reporting in a number of cases.<sup>21</sup> The

---

<sup>12</sup> The term demining encompasses survey, mapping, marking, community liaison, and post-clearance handover as well as physical clearance itself.

<sup>13</sup> HALO in Afghanistan and HALO and MAG in Cambodia are using the Handheld Standoff Mine Detection System metal detector, which has ground penetrating radar incorporated to reduce the number of false signals. The detectors are considered effective and raise productivity, but they are also expensive and complex to use. See reports on Afghanistan and Cambodia in this edition of Landmine Monitor; and see also *Landmine Monitor Report 2007*, p. 35.

<sup>14</sup> The use of a metal detector in mineralized soil (soil with high metal content) or along railway lines is generally not feasible and other approaches must be used, sometimes requiring prodding. Prodding, by which a metal rod is carefully inserted into the ground at a 30 degree angle to check for mines, is more dangerous than the use of a metal detector as the risk of accidental detonation of a mine or item of explosive ordnance is significantly higher. Raking is a technique used in sandy soil, which has proved effective in a number of mine action programs, notably Jordan, Somaliland, and Sri Lanka.

<sup>15</sup> It would appear that some organizations have done this well but that many others have been exceedingly wasteful.

<sup>16</sup> MDDs locate mines through sense of smell, believed to be the vapor from explosives. Concerns persist, however, in certain quarters about their ability to consistently detect all explosive devices in a given area.

<sup>17</sup> Their use as a sole clearance tool remains controversial because of concerns that mines are missed. In addition, machines cannot be used on steep inclines or rocky ground, and dogs do not function effectively in extreme temperatures.

<sup>18</sup> Uganda has calculated that use of a machine on several of its remaining SHAs will save about one year of manual clearance time.

<sup>19</sup> Equivalent to an area roughly twice the size of Paris. This figure excludes the area said to have been cleared in Iran, which has reported conducting more than 2,000km<sup>2</sup> of mine clearance in 2008.

<sup>20</sup> The high total of items destroyed in 2008 is largely explained by reporting by Iran of clearance of more than 77,000 antivehicle mines. It is likely, therefore, that previous years significantly under-reported the number of items cleared.

<sup>21</sup> Thus, for example, the 412km<sup>2</sup> of clearance reported by Morocco are not included in this estimate because, although there are said to be 10,000 deminers engaged in a massive clearance effort, they only have 400 detectors and sets of personal protective equipment and clearance appears to include a very significant amount of release by survey.

largest areas of land were cleared by mine action programs in eight countries—**Afghanistan, Angola, Cambodia, Croatia, Ethiopia, Iraq, Sudan, and Yemen**—which accounted for more than three-quarters of the total recorded clearance (see table below).<sup>22</sup> Mine clearance in 2008 increased compared to 2007, when programs cleared at least 122km<sup>2</sup> of mined areas.

### Compliance with Article 5 obligations

Article 5 of the Mine Ban Treaty requires that each State Party destroy all antipersonnel mines in mined areas under its jurisdiction or control as soon as possible, but not later than 10 years after becoming party to the treaty. Ensuring full compliance with these mine clearance obligations is arguably the greatest challenge facing States Parties.

Since the last edition of Landmine Monitor and as of August 2009, one State Party declared fulfillment of its Article 5 obligations: Tunisia. This makes a total of only 11 States Parties that have declared fulfillment of their Article 5 obligations (see table below). At least three other States Parties could also be in a position to report formally they had fully complied with those obligations at the Second Review Conference in November 2009: **Albania** and **Rwanda** (both with 2010 deadlines) and **Zambia** (2011 deadline). Furthermore, **Montenegro** (deadline of 1 April 2017) is believed to have completed mine clearance operations, but no formal declaration has so far been made as suspected area still needs to be surveyed. The situation in **Djibouti**, whose deadline expired on 1 March 2009, remains unclear, ostensibly due to an unresolved border conflict with Eritrea.<sup>23</sup>

There has also been significant progress in demining over the past 10 years in areas and states not party to the Mine Ban Treaty, notably in **China, Iran, Lebanon, Morocco, Nepal, and Sri Lanka**, as well as in **Taiwan, Georgia** and **Libya** have recently expressed a willingness to engage in further mine clearance operations on their territory.

Against this, 19 mine-affected States Parties have either missed their deadlines or have formally declared that they are not in a position to complete clearance operations before the Treaty's 10-year deadline. One State Party, **Uganda**, declared at the Standing Committee meetings in May 2009 that it would meet its 1 August 2009 deadline, only to submit a three-

Mined area clearance in selected states in 2008

State	Mined area clearance (km <sup>2</sup> )
Afghanistan	51.5
Cambodia	37.9
Croatia	12.2
Angola	8.3
Yemen	5.2
Ethiopia	4.5
Iraq	4.5
Sudan	4.1

States Parties reporting compliance with treaty clearance obligations

State Party	Year of reported compliance	Article 5 deadline
Bulgaria	1999	2009
Costa Rica	2002	2009
El Salvador	1994*	2009
France	2008	2009
Guatemala	2006	2009
Honduras	2005	2009
FYR Macedonia	2006	2009
Malawi	2008	2009
Suriname	2005	2012
Swaziland	2007	2009
Tunisia	2009	2010

\* Date of completion of demining program (prior to entry into force of the Mine Ban Treaty)

<sup>22</sup> This excludes the 27.5km<sup>2</sup> of land reportedly cleared by the Royal Cambodian Armed Forces as the quality of clearance and the extent of area cleared have not been independently verified.

<sup>23</sup> Djibouti completed its clearance of known mined areas in 2003 and France declared it had cleared a military ammunition storage area (ASA) in Djibouti in November 2008.

year extension request on 19 August.<sup>24</sup> Until States Parties decide on its request, Uganda will be in violation of the provisions of Article 5. Of particular concern, two of the four States Parties that formally requested an extension to their Article 5 deadlines in 2009 were unable to provide reliable figures for the extent of contamination (see table below).

In the case of Cambodia, a state that has had a mine action program since 1992, its initial extension request stated that available data did not permit a reliable estimate to be made and noted that a new survey would begin to determine the remaining contamination.<sup>25</sup> The ICBL suggested that Cambodia follow the approach taken by Chad, Denmark, and Zimbabwe: to request a shorter period to conduct the relevant survey and data analysis, and then make a second request properly informed by a reliable assessment of mined areas. For Tajikistan, survey of SHAs is ongoing and the mine action center has noted that its final estimate of contaminated area may increase.

Several States Parties granted extensions in 2008 have since made disappointing progress.<sup>26</sup> **BiH** failed to meet the first target set by its extension request, namely that by 2009 it was to have reduced the estimated area of contamination to 1,573km<sup>2</sup>. To achieve this, BiH should have released 165km<sup>2</sup> of SHAs in 2008, but it achieved only a little over half of this amount (85km<sup>2</sup>) of which only just over 3km<sup>2</sup> was through clearance.<sup>27</sup> Moreover, the extent of the remaining task remains unclear and the assumptions on which completion within 10 years are based appear unrealistic when compared with past performance.<sup>28</sup>

By mid-2009, **Thailand** was already having difficulty meeting the goals it had set out in its extension request. The rate of demining by the national mine action center in the first half of 2009 (1.3km<sup>2</sup>) was well behind what was needed to achieve the projected annual rate (43km<sup>2</sup>), while the estimated area of contamination had actually increased as a result of survey (from 528km<sup>2</sup> to 562km<sup>2</sup>).

The request by **Croatia** estimated that at the beginning of its extension period in March 2009 it would have 944km<sup>2</sup> of suspect land, meaning that it would reduce its total SHA through clearance and technical survey by 53km<sup>2</sup> in 2008.<sup>29</sup> Yet Croatia missed the target by 10.5km<sup>2</sup>, releasing a total of 42.5km<sup>2</sup> in 2008 and bringing the total SHA down to 954.5km<sup>2</sup>, still far in excess of probable contaminated area.<sup>30</sup>

**Ecuador** and **Peru** have continued to make slow progress in clearing SHAs along their common border (both were granted eight-year extensions by the Ninth Meeting of States Parties).<sup>31</sup> Both the **United Kingdom** and **Venezuela**, which were granted a 10-year and a five-year extension, respectively, have still to initiate formal clearance operations.

**States Parties requesting an extension to their Article 5 deadline in 2009**

State	Estimated area of mine contamination (km <sup>2</sup> )	Length of extension request sought (in years)
Argentina	13	10
Cambodia	672 (estimated)	10
Tajikistan	14.4 (estimated, partial)	10
Uganda	0.26	3

<sup>24</sup> Uganda Article 5 deadline Extension Request, July 2009.

<sup>25</sup> Cambodia Article 5 deadline Extension Request, 30 April 2009.

<sup>26</sup> Moreover, certain extension requests were poorly prepared, suggesting an under-performing mine action program.

<sup>27</sup> BiH Article 5 deadline Extension Request (Revision), 27 June 2008, p. 26.

<sup>28</sup> See *Landmine Monitor Report 2008*, pp. 180–181.

<sup>29</sup> *Ibid.*, p. 306.

<sup>30</sup> Interview with Natasa Matesa-Matekovic, Head of Department for Planning and Analysis, Croatian Mine Action Center, Sisak, 9 February 2009.

<sup>31</sup> Ecuador cleared 6,215m<sup>2</sup> of mined areas, leaving 517,312m<sup>2</sup> of mined areas to be cleared, while Peru cleared 1,155m<sup>2</sup> of mined areas on the border with Ecuador, leaving 192,000m<sup>2</sup> of mined areas as well as some mined areas surrounding national infrastructure inside the country.

Future compliance with Article 5 deadlines is likely to be similarly disappointing. Based on progress to date, Landmine Monitor believes that the following States Parties are not on track to comply with the treaty by their respective deadlines: **Mauritania** (2011); **Algeria** (2012); **Chile** (2012); **DRC** (2012); and **Eritrea** (2012). In some cases, the problem is inadequate funding; more often, delays in initiating a program, poor management, and insufficient political will are the root causes. **Colombia** (with a 2011 deadline) will almost certainly remain contaminated with mines laid by non-state armed groups (NSAGs) as security concerns have prevented the safe clearance of some areas. Among States Parties with later deadlines, **Iraq** is a particular concern. Less than a year after it became party to the treaty as one of the world's worst affected countries, Iraq not only had done nothing to mobilize resources needed to address its contamination but had even suspended all clearance outside Kurdish areas, raising serious concerns about the extent to which political leaders understood the severity of the problem or their treaty obligations.

In certain cases, there has been a lack of progress in demining contested borders (particularly in the case of **Thailand/Cambodia**, and **Tajikistan** and its neighbors): this is partly a result of a lack of clear delineation or demarcation of borders. **Jordan**, on the other hand, informed the Standing Committee meetings in May 2009 that, although a dispute over the border with Syria had not been fully resolved, the two countries had agreed demining could proceed unhindered.<sup>32</sup>

Some States Parties have not yet acknowledged that they are legally obliged by the treaty to clear areas they control outside their sovereign territory.<sup>33</sup> As of August 2009, neither **Turkey** nor **Cyprus** had formally accepted responsibility for clearance in northern Cyprus, which is occupied by Turkish forces. A statement in June 2008 from **Moldova**, which had raised hopes that it had acknowledged its responsibility for clearance of any mined areas in the breakaway republic of Transnistria, where it continues to assert its jurisdiction, was later disavowed by the Ministry of Foreign Affairs.<sup>34</sup>

Finally, the extent of any mined areas containing antipersonnel mines in four states with Article 5 deadlines in 2009 and 2010 remained unclear (see table below); none has so far formally reported mined areas containing antipersonnel mines or requested an extension.

**States Parties with Article 5 deadlines in 2009 and 2010 whose compliance is uncertain<sup>35</sup>**

State	Compliance issue
Djibouti	Clearance of known mined areas complete but no formal declaration of compliance; possible new contamination from combat with neighboring Eritrea
Niger	Antipersonnel mine contamination not confirmed
Namibia	Antipersonnel mine contamination not confirmed
Philippines	Antipersonnel mine contamination not confirmed

### Explosive remnants of war contamination

With firm action having been taken to address the global threat from mines, today ERW still represents a huge challenge, with tens of millions of items of UXO and abandoned explosive ordnance (AXO) contaminating countries affected by armed conflict.<sup>36</sup> For example, **Lao**

<sup>32</sup> Statement of Jordan, Standing Committee on Mine Clearance, Mine Risk Education and Mine Action Technologies, Geneva, 27 May 2009.

<sup>33</sup> See Article 5 of the Mine Ban Treaty, which lays down the obligation to clear areas under the jurisdiction or control of a State Party; and Statement of ICBL, Standing Committee on Mine Clearance, Mine Risk Education and Mine Action Technologies, Geneva, 28 May 2009.

<sup>34</sup> See report on Moldova in this edition of Landmine Monitor.

<sup>35</sup> See the relevant reports in this edition of Landmine Monitor for details.

<sup>36</sup> There are also a small number of states (for example, Albania, Republic of the Congo, and Kenya,) in which UXO contamination has occurred as a result of military training or the undesired explosion of ammunition in an ASA. AXO can result from a lack of proper ASA management and control.

**PDR and Vietnam** are still massively contaminated as a result of US bombing campaigns four decades ago, although no credible estimates of the full extent of contamination currently exist.

The adoption of the Convention on Cluster Munitions in May 2008 highlighted a specific threat that Landmine Monitor has reported on for many years—that of cluster munition remnants, especially unexploded submunitions.<sup>37</sup> Although the full extent of contamination is still to be determined, survey and clearance operations in 2008 and 2009 revealed at least 27 states and three areas with some degree of unexploded submunition contamination on their territory, as set out in the table below. It is hoped that reporting under the new convention once it enters into force will clarify the global extent of contamination from cluster munition remnants.<sup>38</sup>

**States and other areas affected by cluster munition remnants as of August 2009<sup>39</sup>**

Africa	Americas	Asia-Pacific	Europe	Commonwealth of Independent States	Middle East and North Africa
Angola	Argentina	Afghanistan	Albania	Azerbaijan	Iraq
Chad		Cambodia	BiH	Georgia	Kuwait
Congo, Republic of the		Lao PDR	Croatia	Russia	Lebanon
DRC		Vietnam	Montenegro	Tajikistan	Syria
Mauritania			Serbia	Nagorno-Karabakh	Western Sahara
Sudan			UK		
Uganda			Kosovo		
Zambia					
<b>8 states</b>	<b>1 state</b>	<b>4 states</b>	<b>6 states, 1 area</b>	<b>4 states, 1 area</b>	<b>4 states, 1 area</b>

<sup>37</sup> The convention defines cluster munition remnants as including the following: unexploded submunitions, unexploded bomblets (submunition dropped from a fixed-wing dispenser), failed cluster munitions (i.e. the canister failed to disperse the submunitions as intended during deployment), and abandoned cluster munitions.

<sup>38</sup> Certain states have already clarified the extent of the area affected by cluster munition remnants. In Serbia, for example, NPA's general survey of submunition contamination, conducted between 9 November 2007 and 30 November 2008, identified 105 "deployment zones" where cluster munitions were used and 390 polygons or suspect areas covering a total of 30.7km<sup>2</sup>. These affected 28 communities in 16 municipalities. Mauritania has reported plans to conduct survey over 6km<sup>2</sup> of SHA reported to contain cluster munition remnants. See, further, the respective reports on these two states in this edition of Landmine Monitor.

<sup>39</sup> Zambia has been added to the list of affected states since last year based on a nationwide survey by NPA, which found two areas containing unexploded submunitions. Guinea-Bissau has been removed from the list as it is reported that the last known cluster munition remnants were destroyed by a UK commercial demining operator, Cleared Ground Demining, in August 2008. Israel has also reported clearing all unexploded submunitions fired by Hezbollah into Israel during the August 2006 conflict in Lebanon. Whether Eritrea, Ethiopia, Grenada, and Saudi Arabia remained contaminated was unclear as of August 2009, so they have not been included in the list. As noted above, both Argentina and the UK claim sovereignty over the Falkland Islands/Malvinas, which are affected by cluster munition remnants, and so both are included in the list. Affected areas not internationally recognized as states are in italics. There may be contamination from cluster munition remnants resulting from training or testing in a number of other states, including Chile, Jordan, and the US.



## Battle Area Clearance

Battle area clearance (BAC) seeks to clean former combat areas of ERW.<sup>40</sup> BAC tends to be far quicker than mine clearance for two main reasons. First, in certain circumstances visual inspection of an area may be sufficient, sometimes without the need to conduct instrument-assisted search of the surface. Second, even when sub-surface clearance is deemed necessary, it does not need such sensitive detectors as are used for mine clearance: BAC seeks to detect far greater quantities of metal than occur in common antipersonnel mines and it does not normally have to leave an area metal free. Accordingly, operations endure far fewer false positive signals from harmless metal fragments and coverage of SHAs tends to be far quicker than mine clearance as a result.

### Battle area clearance in 2008

Despite problems in ensuring that BAC is not double reported (i.e. sub-surface clearance is repeated in surface clearance figures), Landmine Monitor believes at least 270km<sup>2</sup> of battle areas were cleared in 2008, resulting in the destruction of more than 48,000 unexploded submunitions<sup>41</sup> and some 2.3 million other items of ERW. The largest areas cleared by mine action programs in **Afghanistan, Georgia, Iraq, and Lao PDR**, which together accounted for 80% of the total recorded BAC (see table below).<sup>42</sup> BAC in 2008 decreased compared to 2007, when programs reported clearance of at least 412km<sup>2</sup> of battle areas.

**Battle area clearance in selected states in 2008**

State	BAC (km <sup>2</sup> )
Afghanistan	121.1
Lao PDR	55.2
Iraq	14.5
Lebanon	10.0
Georgia	7.9

### Clearance obligations under the Convention on Cluster Munitions

Under Article 4 of the Convention on Cluster Munitions, each State Party “undertakes to clear and destroy, or ensure the clearance and destruction of, cluster munition remnants located in cluster munition contaminated areas under its jurisdiction or control” as soon as possible but not later than 10 years after becoming party. Should cluster munitions be used after the treaty enters into force for a particular state, that state is required to fulfill the same clearance obligations “as soon as possible but not later than ten years after the end of the active hostilities during which such cluster munitions became cluster munition remnants.” Upon fulfilling either of these obligations, the relevant State Party is required to make a declaration of compliance to the next Meeting of States Parties.<sup>43</sup>

Negotiations for the convention benefited from the experiences in implementation of Article 5 of the Mine Ban Treaty. The text is far more detailed as to reporting obligations in its Article 7 reporting on transparency measures, which will assist the future oversight of cluster munition clearance efforts. In particular, States Parties will be required to report on the size of areas both estimated to be contaminated and subsequently cleared, not just on the location of areas and the number of items cleared, as with the Mine Ban Treaty.

### Clearance obligations under Convention on Conventional Weapons Protocol V

Under Article 3 of Protocol V on Explosive Remnants of War of the Convention on Conventional Weapons (CCW), after the “cessation of active hostilities and as soon as feasible,” each State Party and party to an armed conflict<sup>44</sup> is required to “mark and clear, remove or

<sup>40</sup> Thus, as mentioned above, BAC is conducted on areas that do not contain a mine threat. Care must be taken in making this determination: casualties occurred in Lebanon, for example, as a result of BAC being conducted on land that was, in fact, contaminated with mines.

<sup>41</sup> The actual total is probably much higher as Vietnam did not report comprehensive figures for the destruction of cluster munition remnants, and Afghanistan, Azerbaijan, BiH, Cambodia, Iraq, Israel, Lebanon, Sudan, and Uganda did not disaggregate cluster munition clearance figures from other ERW. Full or partial cluster munition clearance figures were reported for the following states: Albania, Croatia, DRC, Georgia, Kuwait, Lao PDR, Serbia, Tajikistan, Vietnam, and Zambia, as well as the areas of Kosovo and Western Sahara.

<sup>42</sup> Reported figures for the Sri Lanka Army of 121km<sup>2</sup> (which resulted in the destruction of only 121 items of UXO) are not included in this total as it has not been possible to verify the clearance.

<sup>43</sup> Article 4.1, Convention on Cluster Munitions.

<sup>44</sup> Including NSAGs.

destroy explosive remnants of war in affected territories under its control.”<sup>45</sup> In addition, the users of explosive ordnance are placed under a special responsibility to record their use of these weapons, and to provide data and assistance for the clearance of any resulting UXO in territory that they do not control.

## Land Release

---

If the mine and ERW problem<sup>46</sup> is to be addressed efficiently, national authorities will have to develop transparent systems to reduce SHAs to confirmed mined areas. As the International Mine Action Standards (IMAS) on land release state: “on some occasions, land has been subjected to full clearance unnecessarily.”<sup>47</sup> Any land that is not contaminated but is physically cleared represents inefficiency and a potentially huge waste of resources for a national demining program.<sup>48</sup>

In part, land release is a recognition that some surveys have led to excessive estimates of the size and number of SHAs.<sup>49</sup> Due to the efforts of many, particularly the Geneva International Centre for Humanitarian Demining (GICHD), which has spearheaded the development of land release processes along with the government of Norway and others, there is now a better understanding that an array of techniques in addition to full clearance can enable SHAs to be addressed efficiently and with a high degree of safety for both program personnel and the intended beneficiaries.<sup>50</sup> These techniques include better information gathering and verification, and greater use of high-quality non-technical<sup>51</sup> and technical survey.<sup>52</sup>

Care must be taken, however, when applying land release to ensure that certain basic principles are followed.<sup>53</sup> In particular, any land confirmed to be contaminated must be fully cleared to humanitarian standards to meet the requirements of the Mine Ban Treaty, and the process of land release by both technical and non-technical means must be accountable and follow applicable mine action standards.<sup>54</sup>

---

<sup>45</sup> Article 3.2, CCW Protocol V on Explosive Remnants of War.

<sup>46</sup> Land release principles are also applicable to battle areas, including areas affected by cluster munition remnants, but procedures tailored to battle areas are to be elaborated in a separate IMAS. Telephone interview with Havard Bach, Head, Operational Methods Section, GICHD, 11 September 2009.

<sup>47</sup> UNMAS, “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009, p. v.

<sup>48</sup> That is not to suggest that this applies to all countries or demining organizations. A number of these have consistently insisted on the importance of careful survey and mapping of SHAs prior to clearance.

<sup>49</sup> See, for example, Coordinator of the Resource Utilization Contact Group (Norway), “Applying all available methods to achieve the full, efficient and expedient implementation of Article 5,” Discussion paper (Revision), July 2008.

<sup>50</sup> HALO stresses the efficiency of a four-stage approach to addressing SHAs: 1. Good non-technical survey. 2. Find the mines, using technical survey/clearance. 3. Clear from the inside out to the limit of the threat. 4. Hand over to local people. Email from Christian Richmond, Desk Officer, HALO, 3 September 2009.

<sup>51</sup> Non-technical survey is defined by the relevant IMAS as survey which involves “collecting and analysing new and/or existing information about a hazardous area. Its purpose is to confirm whether there is evidence of a hazard or not, to identify the type and extent of hazards within any hazardous area and to define, as far as is possible, the perimeter of the actual hazardous areas without physical intervention. A non-technical survey does not normally involve the use of clearance or verification assets. Exceptions occur when assets are used for the sole purpose of providing access for non-technical survey teams. The results from a non-technical survey can replace any previous data relating to the survey of an area.” UNMAS, “IMAS 08.21: Non-Technical Survey, Draft First Edition,” New York, 10 June 2009, pp. 1–2.

<sup>52</sup> IMAS defines technical survey as “a detailed intervention with clearance or verification assets into a CHA, or part of a CHA. It should confirm the presence of mines/ERW leading to the definition of one or more DHA and may indicate the absence of mines/ERW which could allow land to be released when combined with other evidence.” UNMAS, “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009, p. 2.

<sup>53</sup> See *Landmine Monitor Report 2007*, p. 32.

<sup>54</sup> Three IMAS address land release: UNMAS, “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009; UNMAS, “IMAS 08.21: Non-Technical Survey, Draft First Edition,” New York, 10 June 2009; and UNMAS, “IMAS 08.22: Technical Survey, Draft First Edition,” New York, 10 June 2009. All are available for download at: [www.mineactionstandards.org](http://www.mineactionstandards.org).

## Techniques

The IMAS on land release describes the approach as “an evidence-based information assessment process that can help determine with confidence which land needs to be cleared and which does not.”<sup>55</sup> It adds new terms—and potentially new interventions—to the mine action lexicon (and therefore also to the mine action database). The term “Confirmed Hazardous Area” (CHA) refers to “an area identified by a non-technical survey in which the necessity for further intervention through either technical survey or clearance has been confirmed.” The term “Defined Hazardous Area” (DHA) refers to “an area, generally within a CHA, that requires full clearance. A DHA is normally identified through thorough survey.”<sup>56</sup> Thus, a SHA should be subjected to non-technical survey to either confirm or discredit suspicions of the presence of mines. If no—or possibly scant<sup>57</sup>—evidence is found, the land is cancelled. If, on the other hand, evidence of contamination is found, the area is normally defined as a CHA<sup>58</sup> and is then subjected to technical survey. Technical survey then reduces the CHA to a DHA, which is then subjected to full clearance.<sup>59</sup> All stages of the land release process must be carefully documented.

## Achievements

A paper by Norway in July 2008 concluded that: “States Parties [to the Mine Ban Treaty] should acknowledge that land reassessment and release through non-technical means, when undertaken in accordance with high quality national policies and standards that incorporate key principles highlighted in this paper, is not a short-cut to implementing Article 5.1 but rather is a means to more expediently release, with confidence, areas at one time deemed to be ‘mined areas’.”<sup>60</sup> The concept of land release was formally endorsed by the Ninth Meeting of State Parties,<sup>61</sup> and an increasing number of States Parties have been employing land release principles to improve program performance.

## Information Management

Reliable land release (and efficient demining overall) benefits from effective information management.<sup>62</sup> This begins with systematic, high-quality data gathering, a fundamental prerequisite that has too often been lacking in mine action, despite the huge sums of money donors have contributed to the sector. It also befits a sector receiving more than half a billion dollars

<sup>55</sup> UNMAS, “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009, p. 3.

<sup>56</sup> *Ibid.*, p. 1.

<sup>57</sup> According to the IMAS, “Before land can be released from suspicion, it should be established, with a sufficiently high level of confidence, that there is no longer any evidence that the area contains any explosive hazards. This confidence can only be gained after all reasonable efforts to investigate whether mines/ERW are present have been made... ‘All reasonable effort’ may, at one extreme, only be the conduct of a non-technical survey which finds absolutely no evidence of mines/ERW... However, if the non-technical survey confirms some evidence of mines/ERW, it would be reasonable to expend more effort to gain more confidence about which areas are free of mines/ERW and which are not. In this case, ‘all reasonable effort’ may mean that a technical survey or clearance should be conducted.” UNMAS, “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009, p. 5.

<sup>58</sup> In certain circumstances, the evidence may be sufficient to define the area of contamination and this DHA is then subjected to full clearance.

<sup>59</sup> For a flowchart of the process, see UNMAS, “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009, p. 3.

<sup>60</sup> Coordinator of the Resource Utilization Contact Group (Norway), “Applying all available methods to achieve the full, efficient and expedient implementation of Article 5,” Discussion paper (Revision), July 2008.

<sup>61</sup> See Coordinator of the Resource Utilization Contact Group (Norway), “Applying all available methods to achieve the full, efficient and expedient implementation of Article 5,” APLC/MSP.9/2008/WP.2, 2 October 2008; and “Final Report of the Ninth Meeting of States Parties,” 28 November 2009, Paragraph 31.

<sup>62</sup> As IMAS state, “Proper management procedures, including adequate decision-making mechanisms, recording, training, monitoring and adjustment, are essential requirements of the process.” UNMAS, “IMAS 08.20: Land release, Draft First Edition,” New York, 10 June 2009, p. 6.

annually to report accurately and promptly on its achievements.<sup>63</sup> In **Angola**, for instance, the National Demining Institute, despite having 2,000 operational staff across the country, was unable to provide detailed reporting on its demining activities in 2008, as in 2007, because its data management system was said to be not functioning properly.

The primary mine action information management software remains the Information Management System for Mine Action (IMSMA), managed by GICHD. This is the standard database software for mine action, used by some 50 demining programs around the world, but it remains the subject of criticism. Some blame the software while others suggest the operators are at fault. Certainly, the old adage of “poor data in, poor data out” will always apply.<sup>64</sup> In a number of instances, however, notably in **Cambodia** and **Lao PDR**, accessing data from the latest version of IMSMA has proved challenging.<sup>65</sup>

## Mine Action by Non-State Armed Groups

---

During the last 10 years NSAGs have sometimes carried out limited mine clearance or explosive ordnance disposal (EOD) operations. NSAG mine clearance or EOD has taken place in **Colombia**, **Iraq**, **Lebanon**, **Sudan**, and **Sri Lanka**, as well as in **Western Sahara**.

In Kurdish areas of northern **Iraq**, the Kurdistan Democratic Party and the Patriotic Union of Kurdistan undertook mine clearance through the Northern Iraq Mine Action Program, supported by UNOPS, from 1997 until the 2004 integration of the Kurdish groups into the Iraqi Interim Government. Also in northern Iraq, the Hawpar organization, linked to the Turkish Kurdistan Workers Party has carried out limited clearance in 2007 and 2008 with support from NPA. In **Lebanon**, Hezbollah volunteers cleared a possibly large number of submunitions after the armed conflict in 2006. In Southern **Sudan**, the Sudan People’s Liberation Movement/Army undertook mine clearance through the Operation Save Innocent Lives initiative supported by UNICEF from 1997 until the 2005 Comprehensive Peace Agreement and the formation of the Government of National Unity. In northern **Sri Lanka**, the Tamil Rehabilitation Organization Humanitarian Demining Unit, which was linked to the Liberation Tigers of Tamil Eelam (LTTE), undertook clearance activities in cooperation with international clearance organizations between 2002 and 2006.

In 2008 in **Myanmar/Burma**, the Karen National Union, which controls small amounts of territory in the east of the country, was provided with metal detectors for mine clearance and trained in their use. Also in Myanmar, the Chin National Front/Army stated to the NGO Geneva Call that it had cleared mines from three sites along Myanmar’s border with India during 2008.<sup>66</sup>

## Deminer Security

---

In recent years, armed violence has inflicted losses on demining operators, who have also lost staff as well as vehicles and equipment worth hundreds of thousands of dollars in attacks or raids by insurgent or criminal groups.

---

<sup>63</sup> The quality of reporting is uneven but is generally poor. Strictly, the Mine Ban Treaty only requires reporting on locations of areas cleared and the number of antipersonnel mines destroyed; good practice demands far more detailed reporting, as a minimum: the size as well as the location of areas released; the form(s) of clearance or other means used to release the land, disaggregated by area, and all devices encountered and destroyed.

<sup>64</sup> As Landmine Monitor noted last year, it is surprising that data recording and entry has been so difficult in several programs that have received extensive international support and assistance. In Somaliland, for example, the problems are so significant that as of late 2008 the IMSMA database had not been effectively updated since 2003. See *Landmine Monitor Report 2008*, p. 22.

<sup>65</sup> In March 2009, GICHD reported that it would be making changes to IMSMA “to enhance the support that information management can provide to national mine action centres and other mine action partners.” See GICHD, “GICHD Information Management Programme – Changes,” March 2009, [www.gichd.org](http://www.gichd.org).

<sup>66</sup> The Chin National Front/Army signed Geneva Call’s Deed of Commitment in August 2006. The Turkish PKK and its People’s Defense Forces militia signed Geneva Call’s Deed of Commitment in July 2006. Signatories agree to prohibit use, production, stockpiling, and transfer of antipersonnel mines, and to undertake and cooperate in mine action. The clearance activities of both groups were reported as compliance with their pledges under the Deed of Commitment.

In **Afghanistan**, deminers and support staff have been kidnapped and killed since 2007. In May 2008, three security guards and a logistics clerk were killed and a driver wounded in an attack by insurgents. In July, gunmen kidnapped 16 deminers working for the Mine Detection and Dog Centre in eastern Paktia province but released them after the intervention of local community leaders. The same month, separate attacks took place on the Danish Demining Group compound in Balkh province and on deminers returning from clearance, fatally wounding one supervisor. In May 2009, a HALO Trust vehicle was damaged in a vehicle-activated improvised explosive device explosion, slightly injuring several staff.

In **Iraq**, political instability and insecurity have periodically halted clearance. In June 2007 the National Mine Action Authority was shut down after the kidnap and subsequent murder of its director general. Work resumed from April until December 2008, when the Ministry of Defense suspended clearance in all parts of Iraq, except the north, on grounds of security and the need to vet personnel engaged by demining operators (due to their access to mines and/or explosive ordnance).

In **Sri Lanka**, demining launched in 2002 became more difficult after 2007 and largely came to a halt due to increased armed conflict, including mine use, until May 2009. In 2008, operators experienced abductions of deminers in areas controlled by security forces or pro-government militias, while some deminers working in LTTE-controlled territory were forcibly recruited into local militias.

In **Senegal**, the Movement of Democratic Forces of Casamance (MFDC) attacked an army mine clearance unit killing three and injuring seven in 2005. In 2006, an army demining unit accompanied by Moroccan soldiers was attacked by the MFDC resulting in the death of two soldiers and leaving 14 injured. In 2008, Senegal requested an extension of its Article 5 deadline citing, among other things, deminer security as a reason for its inability to clear the mines in time.

In **Sudan**, several operators and UN agencies reported increased insecurity since 2006 when the Ugandan Lord's Resistance Army ambushed a team from the Swiss Foundation for Mine Action near Juba, killing two deminers. Several other demining organizations halted operations due to movements of NSAGs or armed conflict in their areas. In January 2007, an Indian peacekeeper in Southern Sudan was killed and two others wounded while escorting a mine clearance team. In 2008, insecurity prevented survey activities taking place in Western Darfur.

## **The Future of Mine Action**

---

The next few years may come to be seen as the high water mark of demining. In most countries, the mine threat is being reduced significantly and better demining approaches and procedures have widely—though not always—increased both productivity and effectiveness. Redoubled efforts to complete mine clearance in all affected states, whether party to the treaty or not, remains a priority. Significant resources—from both national and international sources—will continue to be needed for many years. And the implementation of the Convention on Cluster Munitions will surely see major inroads into global contamination from unexploded submunitions.