# Land Release:

# A guide for mine and ERW

# affected countries


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The Geneva International Centre for Humanitarian Demining (GICHD) works for the elimination of anti-personnel mines and for the reduction of the humanitarian impact of other landmines and explosive remnants of war. To this end, the GICHD, in partnership with others, provides operational assistance, creates and disseminates knowledge, improves quality management and standards, and supports instruments of international law, all aimed at increasing the performance and professionalism of mine action.

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# LAND RELEASE:
# A GUIDE FOR MINE AND ERW AFFECTED COUNTRIES

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## FOREWORD

Over recent years, the community involved in achieving the aims of the Anti-Personnel Mine Ban Convention has begun to struggle with a fundamental question related to the efficiency of clearance efforts. That question was caused by the increasing realisation that much of the land being cleared, using expensive and resource-intensive assets, did not, in the end, contain hazardous items. Also, it is common for general assessments and impact surveys to overstate the scale of the problem, by declaring large areas to be suspect.

It has always been a challenge to distinguish clearly between those areas of land that pose a high degree of threat to local populations, and those that may have simply fallen into disuse. In addition, over recent years, extreme pressure on land in some countries has forced local populations to take matters into their own hands in the form of village demining, or simply re-occupying land, regardless of whether a government agency classifies the area as a Suspected Hazardous Area (SHA).

These emerging issues have forced the mine action sector to review its thoughts, processes and methodologies on how land can be released after it has been classified as a SHA. This is an emotive subject, and human nature is usually risk-averse. Generally, individuals will not make a decision which may later prove to be wrong - particularly when it involves human lives. The purpose of this study is to stimulate mine action programmes into thinking in a more lateral way and to consider more closely options for releasing land in a non-technical manner.

The study was informed by a broad section of the mine action community. I would like in particular to thank the six programmes: Bosnia and Herzegovina, Cambodia, Croatia, Iraq, Lebanon and Yemen, that have allowed us to document and publish work relating to their programmes. I would also like to thank the Governments of the Czech Republic, Finland, Italy, Norway, Sweden and the United Kingdom for their financial support for this work.

**Ambassador Stephan Nellen**
Director
Geneva International Centre for Humanitarian Demining

CHAPTER 1

# INTRODUCTION

## LAND RELEASE: CONTEXTUAL ISSUES

After conflict, mine and ERW-affected countries are obliged to assess the extent of contamination in order to produce cost-effective clearance plans, warn populations and meet treaty obligations. Broad surveys produce preliminary estimates and define perimeters for clearance resources. However General Assessments and Landmine Impact Surveys (LIS) often overestimate the extent of land actually affected by mines and Explosive Remnants of War (ERW). Imprecise demarcation of suspected areas can lead to inappropriate allocation of time and resources for mine action tasks. A substantial proportion of areas targeted for mine clearance do not contain ERW and do not require systematic clearance. In a previous study it was found that only two per cent of land cleared in 15 countries over a period of time was actually contaminated with mines and ERW.[1] Inaccurate initial projections often give rise to "false positive" Suspected Hazardous Areas (SHA) resulting in improper allocation of time and resources. This can delay population resettlement, reconstruction and development. Such delays often cause international donors to lose confidence. False positive SHA are the target of land cancellation and land release processes.

National signatories to the Anti-Personnel Mine Ban Convention have specific obligations to fulfil. These require national mine action authorities to complete the clearance of all known minefields within a limited timeframe.[2] Meeting the obligations of Article 5 of the Anti-Personnel Mine Ban Convention is a particular challenge when a country must deploy limited resources to clear excessively large suspect areas.

If countries are to be successful in reaching their mine action objectives, a drastic change in approach must be developed and tailored to different countries' specific needs. Those mine and ERW-affected countries yet to undertake their first general survey need an accurate mine/ERW assessment in order to effectively manage clearance resources. Other countries which already have substantial polygons showing on their national contamination map must reduce the size of the SHA while fulfilling their obligations under the Anti-Personnel Mine Ban Convention and maintaining compliance with the International Mine Action Standards (IMAS).

A few country programmes have developed their own approaches to releasing land without undertaking full clearance processes. Generally, these programmes use non-technical methods. However, a lack of a globally accepted approach has prevented many other countries from developing land release approaches.

## INTRODUCTION

Three different actions are typically undertaken in order to release land that has been recorded as a SHA:

1. Land release by General Survey;
2. Land release by Technical Survey; and
3. Land release by Clearance.

The approach moves progressively from the less technical and cheaper "General Survey", through "Technical Survey", to the more technical and costly "Clearance". Increasingly technical methods of establishing threat levels are required as more accurate and relevant data is collected for each suspect area. This is done until each suspect area is either "released" or classified as mined.

This report should not be read as an instruction manual for policy makers who wish to implement the concept in a mine/ERW affected country. It is intended as a practical study through which best practices and lessons learned can help to guide practitioners through the essential process of concept development, methodological approach and effective implementation.

## SPECIFIC OBJECTIVES

The purpose of this study is to examine how excessively large SHA have been effectively reduced to the boundaries of the real mined area in a number of countries. This process often requires the reclassification of SHA into new categories of land. Released land generally shows no evidence of a mine/ERW threat and the terminology describing this land status varies from either "cancelled", "reclaimed" or "without obvious risk". The study further examines the different terminology applied in the different countries, subsequently proposing generic terminologies and definitions that can be utilised universally.

This study addresses the use of non-technical efforts to release land. In other words, it focuses on the mechanisms that will allow a re-classification, or release, of land by re-assessing old survey information or undertaking new general survey. The study does not address the mechanisms that will apply when undertaking technical survey. This forms part of a much wider initiative by the GICHD to develop land release methodologies that entail all elements of the broader land release process, including principles of technical survey.

## INTRODUCTION

This study records available methodologies, land release criteria and lessons learned from non-technical approaches in various mine-affected countries with first-hand experience of dealing with mine/ERW suspected land. It analyses how country programmes with a wide range of mine action experience translate the concept through policy papers and legislation, describe it in Standing Operating Procedures (SOPs) and ultimately implement it on the ground.

The study also examines cases which demonstrate that land release requires community ownership throughout the different stages of the process. It is essential that the land user has full confidence in the land and in the land release process. Mine action programmes must incorporate the national legal framework on issues such as post land cancellation liability, as well as local perspectives of risk.

This report highlights best practices from six countries:

- Bosnia and Herzegovina;
- Cambodia;
- Croatia;
- Iraq;
- Lebanon; and
- Yemen.

## USE OF TERMINOLOGY

The study uses the expression "Land Release" with reference to the IMAS definition. However, it is intentionally used in the main body of the text as a flexible concept since it is continually re-interpreted in the light of a country's needs and experience.

Table 1 summarises a selection of IMAS technical terms and definitions with their respective equivalent and/or translations from each country case. To ensure clarity IMAS (04.10) definitions have been used throughout the document. In addition, a further set of terminology (Table 2) has been developed to facilitate the examination and analysis of the country cases. Each complementary term draws directly from the country's land release experience and to this end they are to be used to complement the IMAS definition. The document uses IMAS and the IMAS complementary terminology unless country specific wordings appear more relevant for describing a particular process.

**Table 1 |** IMAS definitions

**IMAS (04.10)**

**3.16 | area reduction**
the process through which the initial area indicated as contaminated (during any information gathering activities or surveys which form part of the GMAA process) is reduced to a smaller area.

Note: Area reduction may involve some limited clearance, such as the opening of access routes and the destruction of mines and ERW which represent an immediate and unacceptable risk, but it will mainly be as a consequence of collecting more reliable information on the extent of the hazardous area. Usually it will be appropriate to mark the remaining hazardous area(s) with permanent or temporary marking systems.

Likewise, area reduction is sometimes done as part of the clearance operation.

**3.27 | cancelled area**
an area previously recorded as a hazardous area which subsequently is considered, as a result of actions other than clearance, not to represent a risk from mines and ERW.

Note: This change in status will be the result of more accurate and reliable information, for example from technical survey, and will normally only be authorised by the NMAA, in accordance with national policy. The documentation of all cancelled areas shall be retained together with a detailed explanation of the reasons for the change in status.

**3.32 | cleared area, cleared land**
an area that has been physically and systematically processed by a demining organisation to ensure the removal and/or destruction of all mine and ERW hazards to a specified depth.

Note: IMAS 09.10 specifies the quality system (i.e. the organisation, procedures and responsibilities) necessary to determine that land has been cleared by the demining organisation in accordance with its contractual obligations.

Cleared areas may include land cleared during the technical survey process, including boundary lanes and cleared lanes.

**3.98 | General Mine Action Assessment (GMAA)**
the continuous process by which a comprehensive inventory can be obtained of all reported and/or suspected locations of mine or ERW contamination, the quantities and types of explosive hazards, and information on local soil characteristics, vegetation and climate; and assessment of the scale and impact of the landmine and ERW problem on the individual, community and country.

**3.135 | Landmine Impact Survey (LIS), impact survey**
an assessment of the socio-economic impact caused by the actual or perceived presence of mines and ERW, in order to assist the planning and prioritisation of mine action programmes and projects.

**3.144 | marking**
emplacement of a measure or combination of measures to identify the position of a hazard or the boundary of a hazardous area. This may include the use of signs, paint marks etc., or the erection of physical barriers.

**Table 1 |** IMAS definitions

**3.165 | monitoring**
the authorised observation, inspection or assessment by qualified personnel of worksites, facilities, equipment, activities, processes, procedures and documentation without taking responsibility for what is being monitored. Monitoring is usually carried out to check conformity with undertakings, procedures or standard practice and often includes recording and reporting elements.

**3.201 | Quality Assurance (QA)**
part of QM focused on providing confidence that quality requirements will be fulfilled. (ISO 9000:2000)

Note: The purpose of QA in humanitarian demining is to confirm that management practices and operational procedures for demining are appropriate, are being applied, and will achieve the stated requirement in a safe, effective and efficient manner. Internal QA will be conducted by demining organisations themselves, but external inspections by an external monitoring body should also be conducted.

**3.202 | Quality Control (QC)**
part of QM focused on fulfilling quality requirements. (ISO 9000:2000)

Note: QC relates to the inspection of a finished product. In the case of humanitarian demining, the "product" is safe cleared land.

**3.203 | Quality Management (QM)**
coordinated activities to direct and control an organisation with regard to quality. (ISO 9000:2000)

**3.209 | reduced area** (see **area reduction**, above)
the area of hazardous land remaining after the process of area reduction. It is still referred to as a hazardous area.

**3.252 | technical survey** (previously referred to as a Level 2 survey)
the detailed topographical and technical investigation of known or suspected hazardous areas identified during the planning phase. Such areas would have been identified during any information gathering activities or surveys which form part of the GMAA process or have been otherwise reported.

**3.261 | tolerable risk**
risk which is accepted in a given context based on current values of society. (ISO Guide 51:1999(E))

**3.273 | village demining**
self-supporting mine and/or ERW clearance and hazardous area marking, normally undertaken by local inhabitants, on their own behalf or the behalf of their immediate community. Often described as a self-help initiative or spontaneous demining, village demining usually sits outside or in parallel with formal mine action structures, such as demining undertaken by militaries or humanitarian demining such as is supported by the UN, international and national non-governmental organisations, private enterprise and governments, among others.

**Table 2 |** Complementary Terminology to IMAS

**False positive SHA**
Areas erroneously identified by the LIS as potentially dangerous due to extrapolation of defined risk areas leading to oversizing of suspect land. Following in-depth information collection and the use of one or more clearance processes, these false positive SHA do **NOT** actually contain any evidence of threat. False positive SHA are the target of land cancellation and land release processes.

**General Survey**
The rationale for this particular type of survey is the accuracy, relevance and updated level of data that would suffice to release land. As opposed to technical survey, this qualitative approach to survey is mostly information based.

Note: As shown in Table 1, "General Survey" is a common expression used in countries considered in the case studies to describe the methodological process of data collection for the refinement of the LIS findings. However, as shown in Annex A, each country has developed its own unique understanding of the concept, which implies nuances directly related to the country's own methodologies.

**Suspected Hazardous Areas (SHA)**
Areas identified as containing a potential source of threat, requiring confirmation either via in-depth information collection or the use of one or more clearance tools. The overestimation of the size of SHA is a common problem, which mine and ERW-affected countries need to address via technical and non-technical methods. The land being classified as "suspect" does not mean it is not used by the population. The Cambodian and Yemeni cases show that its return to productive use is a crucial input to the land cancellation process.

**Table 3 |** IMAS (04.10) technical and complementary terminologies, country translations and/or closest equivalents

| IMAS definitions | Bosnia & Herzegovina | Cambodia | Croatia | Iraq | Lebanon | Yemen |
|---|---|---|---|---|---|---|
| Landmine Impact Survey or Impact Survey | Landmine Impact Survey | Level One Survey | Extensive Survey | National General Survey | Landmine Impact Survey | Landmine Impact Survey |
| Technical Survey | Technical Survey | Technical Survey | Technical Survey | Technical Survey | Technical Survey | Technical Survey |
| Cancelled Area | Area without obvious risk | Reclaimed Area | Cancelled out from SHA | Cancelled Area | Cancelled Area | Cancelled Area |
| **Complementary Terminology to IMAS** | | | | | | |
| General Survey | General Survey | Operators own terminology | General Survey | General Survey | General Survey | Rapid Assessment |
| Suspected Hazardous Area | Suspected Hazardous Area | Mine Suspected Land | Suspected Dangerous Area | Mine Suspected Area | Low Threat Hazardous Area (LTHA) | Suspected Hazardous Area |

It is important to bear in mind that although some countries may use the same terminology, its adaptation to contextual requirements means that its meaning may not only differ from the generic IMAS definition, but widely vary from one country to another. As such, a widely used terminology like "Technical Survey" often has its concept developed continually (see the Cambodian and Yemeni cases, for instance) to address specific mine/ERW issues, thus rendering it more and more contextually pertinent than its IMAS equivalent.

**Table 4** | Countries' main technical expressions with no direct IMAS translation/equivalent

| | Countries' specific technical expressions |
|---|---|
| **Bosnia & Herzegovina** | Systematic Survey: a particular type of survey sitting between the LIS and the more in-depth survey, which allows for SHA cancellation. The systematic survey collects broad information on the boundaries of the minefield and often occurs in parallel with a much more detailed survey. |
| **Cambodia** | Reclaimed land: land that has been used by the communities for a minimum period of three years with no accidents. Reclaimed land does not necessarily mean that all the threat has been effectively removed, or indeed ever existed. It may be that in some cases people working the reclaimed land are only cultivating the topsoil, thus preventing them from coming into contact with mines and ERW buried further beneath the surface. This concept builds on local risk perception and people's specific risk tolerance threshold.[3] |
| **Croatia** | Land used at one's own risk/peril: land deliberately used by the communities despite professional and official warnings indicating the presence of potential threat. This expression focuses on the user's liability in case of accidents.<br>Land release refers to suspect land that was not used by the population due to their reluctance to enter the land. In this context the level of risk is NOT accepted by the community.<br>Cancelled area: area previously marked "red" in the database although people were using the land during the entire period of the war. This document will use a broader meaning for both expressions without reference to whether the land was utilised or not. The study will thus focus on the processes themselves in order to facilitate the analysis of the model and its comparison with other country cases. |
| **Iraq** | Fade out areas: buffer zones of varying size, adjacent to the boundaries of a confirmed minefield. These zones will act as a safety buffer and will usually but not always, be submitted to clearance prior to the release of all land external to it. |

For further information on country specific terminology, see Annex A.

This publication provides six case studies for analysis. They all take a similar form, with a table showing a summary of the situation within the country. Each case then outlines the national background to the problem and the aims and objectives of the extant process. A flow diagram then outlines the process methodologies, and this is supported by a description and analysis of the process.

The case studies are designed to stand alone but in order to draw useful lessons from the different approaches and methods outlined, it is recommended that the studies should be considered together.

CHAPTER 2

# COMPARATIVE ANALYSIS

## COMPARATIVE ANALYSIS

It has always been a challenge to distinguish clearly between those areas of land that pose a high degree of threat to local populations, and those that may have simply fallen into disuse. Extreme pressure on land in some countries has forced local populations to take matters into their own hands in the form of village demining, or simply re-occupying land, regardless of whether a government agency has classified the area as a SHA.

This chapter will draw lessons from the six country case studies that have been compiled and utilise their experience and processes to guide readers into consideration for possibilities for improvement in their own country's methodologies.

### GENERAL

There will always be a requirement for technical survey and full clearance. The six case studies show, however, that the overall size of SHA can be significantly reduced by formalising a process of releasing land as a result of a non-technical process. Different approaches have been adapted in the six target countries but they have all developed more or less formal ways to justify reclassification or release of land that would traditionally be subjected to a much more demanding process of technical survey and clearance. Despite contextual differences, major principles forming the base for the release of SHA by means of non-technical efforts can be identified. The need for a proper general survey and the involvement of, and approval by, the local communities are some examples of similarities between the models examined in the case studies.

In some cases the technical survey process leads to the release of false positive SHA because mine patterns may have been identified thus reducing the suspicion of mines in other areas. It could be said that technical survey teams also have a non-technical role in the land release process.

### CRITERIA

Vital aspects of a non-technical land release method are the quality and relevance of information gathered. The case studies show that the countries differ in their specific requirements and criteria. Some land release processes, like the Croatian model, require demanding, well-documented and methodological procedures. Land within the SHA is redefined and systematically classified according to the level of threat. Release is only possible if all pre-determined criteria for release are fulfilled. Other models show various levels of requirements. The Cambodian National Area Reduction policy is, for example, very broad and states that land that has been used for three years resulting in no accidents may be reclaimed. Mines and ERW *may* still

be present, buried deep in the soil, yet the national mine action authority has officially accepted this level of threat. The operators, however, sometimes add their own requirements to the national guidance by effectively involving the communities before releasing the land.

**Table 5 |** Selected issues related to Land Release

| | Criteria |
|---|---|
| **Bosnia & Herzegovina** | Loosely time-bound criteria leaving room for variable interpretations and subjective decision making.<br>> Area used intensively during the post-war period with no accidents.<br>> Area needs to be ploughed, excavated or at least disturbed down to a minimum depth of 10 cm. |
| **Cambodia** | Uses two layers of land release; one is cancellation and the other is reclaimed land. An area needs to be cleared to achieve cancellation. All areas subject to reconstruction work will need to be cancelled. Criteria for reclamation of land include:<br>> Area used by communities for a period of three years.<br>> No accident occurred during this period. |
| **Croatia** | A detailed and well documented system. Release criteria include:<br>> No original data on mine laying exists.<br>> No previous accidents.<br>> No previous fortification facilities/barriers showing mine/ERW existence.<br>> The area has not been used for fighting or military purposes.<br>> No detonation in areas exposed to fire.<br>> No indicators of mines (marking, casing material etc).<br>> The above criteria are confirmed by survey teams and through conversations with contact persons.<br>> If area is in use, analyse and document the use of the area. Confirm that there have been no detonations by people, animals or fire and no evidence of mines/ERW has been seen by the users. |
| **Iraq** | Details of each criteria for land release have not been fully developed and there is scope for subjective decision making. The criteria used in this process are:<br>> Land release depends on the intended use of land.<br>> The duration since the land was first used by villagers.<br>> Availability of mine signs.<br>> Distance from nearest accident to the area in question.<br>> The landowner's approval that the area is free from mines/ERW. |

**Table 5** | Selected issues related to Land Release

| | Criteria |
|---|---|
| **Lebanon** | The criteria do not indicate specific timeframes or attributes to the suspect land:<br>> A comprehensive survey completed.<br>> No indications of mine/ERW during the survey.<br>> No mine/ERW accidents in the area.<br>> No signs of fighting or military positions within 200m of the target area.<br>> Landowner interviewed and agrees that the area is mine/ERW free.<br>> Area being used on a regular basis. |
| **Yemen** | Only areas that have been used by the local communities with no evidence of mine/ERW can be released without a technical intervention. Specific criteria include:<br>> Land indicated by the communities as posing no obvious threat.<br>> Land accepted as sufficiently risk free by the local communities.<br>> Land used by people and farm animals over the past seven years.<br>> Land used shown no evidence of mine/ERW during this period.<br>> No military positions identified in the area. |

## LAND CLASSIFICATION AND TERMINOLOGY

Mine action vocabulary is often developed to properly describe a situation or process. In light of this, the development of a universally understood terminology is a complex issue since the very relevancy of its application is challenged by various country scenarios. Some expressions have been created to describe a specific and legal situation (as in Croatia, "areas used at one's own risk") or to illustrate an individual process (Cambodia's "reclaimed land"). Although a common idea can be found in the use of the same vocabulary, e.g. Technical Survey, its application to a particular context will necessarily entail adaptation. Likewise mine action authorities use specific expressions, which do not necessarily reflect the ones used by the operators on the ground. In spite of problems like translation, adaptability, accuracy and concept "ownership", a common terminology would no doubt facilitate database update, information sharing and coordination between agencies and/or mine action programmes active on the ground. Table 3 shows the different use of terminology in the six countries studied.

## RISK TOLERANCE AND STANDARDS

Several of the land release practices draw attention to local risk tolerance thresholds and compliance with international standards. Pressure on land and the risk perception by the population living in suspect areas are crucial factors when designing non-technical land release strategies. In Lebanon, it is assumed that all suspect land is "low threat" until a risk assessment has proven otherwise. This policy limits the overestimation of SHA and promotes technical survey and mine clearance to concentrate on areas where high risk areas have been clearly identified. Croatia is at the opposite end of the spectrum, since "every doubt of mine and ERW contamination" is required to be removed. The Croatian model assumes that all SHA are "high threat" until receiving all the evidence that the land is safe.

Risk tolerance varies between countries, communities and individuals. Risk tolerance is also time related; tolerance towards risk is typically higher immediately after conflict as opposed to later. These variations make it difficult to develop concrete criteria for risk tolerance. Most of the case studies show, however, that it is considered important to ensure that the local population and communities are involved in discussions about residual risk.

## LOCAL PARTICIPATION AND OWNERSHIP OF LOCAL AUTHORITIES

An essential feature of a non-technical land release process is genuine local participation. Technical approaches to SHA release usually have clear procedures as to how to involve the communities and local authorities in the planning, implementation and handover process. Yet some discrepancies may exist between these procedures and the methods applied on the ground, Non-technical handover approaches are often less precise, despite the fact that the process is built on data collection and analysis as well as the land users' confidence in the safety of the land.

Where area release forms exist, they typically require the signature of the village leader and/or landowners to agree on the new status of the land. Yet the process through which villagers have actively contributed in selecting the SHA, deciding the size of the reclassified land, agreeing with the residual level of threat, influencing the final decision etc., is often less clear. Land release needs to be a genuine participatory process. Failure to achieve this may result in the released land not being utilised.

**Table 6** | Local participation levels

| | Criteria |
|---|---|
| **Bosnia & Herzegovina** | > Representatives from local authorities (i.e. cantonal leader) make recommendations as to which areas should be reclassified.<br>> Lack of detailed information about the degree of community participation in this process. |
| **Cambodia** | > Mine Action Planning Units (MAPUs) collect information about SHA already used by the communities.<br>> Limited community involvement in the decision making process to release land. |
| **Croatia** | > High level of community participation in the survey process. |
| **Iraq** | > General Directorate of Mine Action (GDMA) and the landowner will agree on the safety of the released land.<br>> Landowner's approval is recorded through the signing of relevant documents.<br>> Not clear to what degree the local authorities are actively involved in this process. |
| **Lebanon** | > Land needs to be endorsed in writing as mine/ERW free by at least two landowner representatives and the local Mukhtar (village chief). |
| **Yemen** | > High level of local participation.<br>> Endorsement by the community leader is a requirement for land release. |

## AUDIT TRAIL AND LIABILITY

Most countries have no mechanisms to monitor land that has already been released. With the exception of Croatia, where liability is transferred to the land users, little is mentioned in the case studies about post-release monitoring of released land and the transfer of liability. However the Lebanese model states that a follow-up check should occur some time after the release and the land status will change if evidence of mine/ERW on cancelled areas should occur. Although QC and QA are well defined in some cases, like Iraq and the Yemeni models, audit trails may need to be further clarified and streamlined, especially in the non-technical process. In Yemen, Lebanon and Iraq, liability is partially transferred to the local communities since land release relies on the approval from representatives of these communities. In Cambodia, legalising the process of reclaiming land implies that the Government accepts liability in case of future accidents.

The technical process for land release is generally more detailed as to the degree of follow-up and continual monitoring. Partly addressing this issue, the Lebanese model specifies that mechanical flails and/or mine detection dogs can be used as QA community confidence-building tools.

## MAIN FINDINGS

Table *7* summarises the main findings of the case studies. It is based on documents provided by the relevant mine action organisations and demining specialists. In areas where information was either insufficient or imprecise the expression Not Available (N/A) is used. The participation of the communities and local/national authorities is difficult to clearly ascertain. However cross-checking of country cases shows that communities do feature in some key stages of the process i.e. the request for land investigation, approval of residual risk after the land release, QC request, planning and supporting the implementation of permanent marking, updating and/or sharing database information, etc. The assessment therefore uses a general scale of low, medium and high.

**Table 7** | Summary of main findings in the six case studies

| | Bosnia & Herzegovina | Cambodia | Croatia |
|---|---|---|---|
| **Land Release: main features** | General Survey, Technical Survey & Permanent Marking | Survey of reclaimed land | SHA reclassification & Cancellation out |
| **Mine Ban Treaty obligations** | Not yet fulfilled | Not yet fulfilled | Not yet fulfilled |
| **Specific Terminology** | "Areas without obvious risk" | "Reclaimed land" | "Areas used at one's own risk/peril" |
| **Land release documentation** | SOPs planned for revision | Operators use their own SOPs. No national procedures | Detailed procedures strictly bound to time, land use and land attributes |
| **Participation of communities is mentioned in land release process** | Yes | Yes, especially in Khmer policy version | Yes |
| **Involvement of local/national authorities is mentioned in the entire process** | Yes | N/A | Yes |
| **Cancellation criteria: level of pre-determined requirements** | Medium | Low | High |
| **Reclassified land is automatically released** | N/A | Released | Released yet "used at one's own risk" if opinion not fully shared by CROMAC. |
| **Permanent marking of reclassified and released land** | Yes | No | Yes |
| **Operators clear roles and responsibilities** | Detailed roles and responsibilities | Operators follow their own SOPs | Detailed roles and responsibilities |
| **Update of national database** | Regular | Regular | Regular |
| **QC/QA & monitoring** | Regular | N/A | Regular |
| **Liability for accidents occurring on land released by non-technical effort** | N/A | N/A | Land user is liable & possible change of status |

**Table 7** | Summary of main findings in the six case studies

| Lebanon | Iraq | Yemen | |
|---|---|---|---|
| All SHA are LOW threat until Risk Assessment | SHA – Mined areas & Fade out areas = release | Combined General Survey and Technical Survey | **Land Release: main features** |
| Not yet acceded | Not yet fulfilled | Not yet fulfilled | **Mine Ban Treaty obligations** |
| "High" or "Low" threat areas | "Fade out areas" | "Areas with no obvious risk" | **Specific Terminology** |
| Procedures for cancellation well documented | Documented and illustrated | SOPs in Arabic available since 2001 | **Land release documentation** |
| Yes | Yes | Yes | **Participation of communities is mentioned in land release process** |
| Yes | Yes | Yes | **Involvement of local/national authorities is mentioned in the entire process** |
| Medium | Medium | Low | **Cancellation criteria: level of pre-determined requirements** |
| Released | Released | Released | **Reclassified land is automatically released** |
| N/A | N/A | No | **Permanent marking of reclassified and released land** |
| Detailed roles and responsibilities | N/A | N/A | **Operators clear roles and responsibilities** |
| Regular | Regular | Regular | **Update of national database** |
| Regular | Regular | Regular | **QC/QA & monitoring** |
| N/A | N/A | Land user is liable | **Liability for accidents occurring on land released by non-technical effort** |

## CHAPTER 3

# CONCLUSION

## CONCLUSION

The case studies show that alternative non-technical land release processes that have been designed, tested and implemented offer practical and more cost-effective solutions to meeting individual Treaty obligations while still remaining IMAS compliant.

As a result of a typical initial overestimation of total SHA, several approaches have been designed, ranging from non-technical and inexpensive methods to the more technical and resource intensive one (land clearance). The status of suspect land may not change from being "mine/ERW suspected" to "free of mines and ERW" but instead shift from "suspected" to "showing no evidence of threat". This shift in category is crucial, especially for countries where the prospect of carrying out significant numbers of years of clearance activities is far beyond present financial and political reach.

Some country programmes have developed their own responses to the land release problem and have further elaborated the concept, creating new terminologies to attempt to adequately describe conceptual nuances. Most terminology draws heavily on IMAS generic definitions and several concepts are still being improved to adjust to evolving in-country situations, so as to reach a maximum positive impact.

The case studies show that there are many similarities between the non-technical land release processes that have been adapted in different countries. There is, however, a difference in emphasis on certain aspects – and the terminology is used differently. The similarity in the principle way of releasing land as a result of a non-technical effort does, however, give positive conditions for defining broad generic principles and requirements when developing non technical land release models. Seven principles are identified below:

1. A formal, well-documented and recorded process of investigation into the mine/ERW problem;
2. Well-defined and objective criteria for the reclassification of land;
3. A high degree of community involvement and acceptance of the decision making;
4. A formal process of handover of land prior to the release of land;
5. An ongoing monitoring mechanism after the handover has taken place;
6. A formal national policy addressing liability issues; and
7. A common set of terminology to be used when describing the process.

These seven recommendations are expanded on in the following chapter.

CHAPTER 4

# LAND RELEASE: A BROAD GENERIC APPROACH

## LAND RELEASE: A BROAD GENERIC APPROACH

SHA can be released through three basic approaches: general survey (or reassessment of old survey information), technical survey and full clearance. A fourth approach is to examine local people's use of the area over time and allow the release of already well-used land. These approaches need to be applied step by step from the less technical and less costly (where the level of threat is low) to approaches that require progressively more clearance tools and resources (where the level of threat is higher). Although the primary purpose of this document is to examine non-technical approaches, the model describes a wider and more thorough approach of combined non-technical and technical approaches. It can be used as a basis for developing national strategies on land release and has five principle elements:

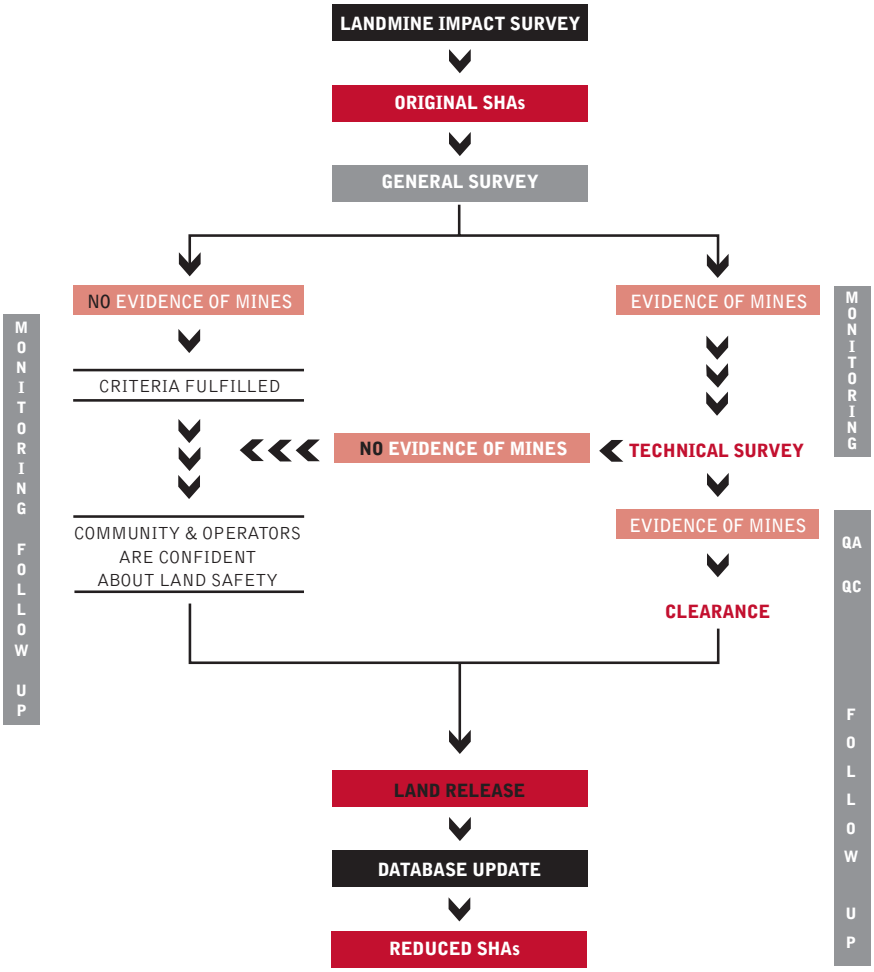
1. Survey/hazard identification (through General Survey and Technical Survey);
2. Hazard assessment (classification and assessment of information);
3. Problem mitigation (adapted starting from the less costly and less technical);
4. Acceptance criteria (based on the quality of the processes and local community risk acceptance); and
5. Management, monitoring and QC (with communities and local authorities ownership for long-term land management).

### DESCRIPTION

To facilitate the overall process, the main criteria for non-technical land release have been identified and summarised in a model (Figure 1).

Mine/ERW-affected countries may use it to plan or refine their present approach to releasing suspect land. The model is a guide and its purpose is to record principal stages and criteria that need to be incorporated into the decision-making process. For reference, each country case study shows a similar model indicating the country's procedures.

**Figure 1** | Basic Land Release Process



## BROAD GENERIC PRINCIPLES AND REQUIREMENTS

### 1. A formal, well-documented process of investigation into the mine/ERW problem

A precondition for any release of land using non-technical approaches is a credible investigation into the risk of the presence of mines or ERW. In some countries, land has been released as a result of reanalysing old survey information more thoroughly. More common, however, is the conduct of a new survey. There are several different survey types. The LIS identifies SHA by analysing which communities are affected by landmines and then estimates the size of a SHA. LIS' have often overestimated the SHA. A General Survey is a common denominator for more thorough processes of investigating the boundaries of the SHA and the type, condition and more specific location of mines and ERW, with less focus on the impact on the local population. The General Survey is in other words a hazard identification process. The output from a General Survey is based purely on the collection of information from a variety of sources, coupled with visual field inspection. The General Survey is the first step from which mine action organisations can build an approach and finally make decisions on whether land can be released. For land to be released through a General Survey there needs to be a documented high level of confidence in the collected information. Factors that will influence this process include:

- A thorough and well described methodology ensuring objective assessments;
- Sufficient number of credible informants. Names and contact details recorded; and
- Survey information quantified if possible.

A General Survey should ensure that not only are major informants with knowledge of the conflicts or community leaders involved, but that also other relevant respondents are included in the process of data collection and information cross-checking.

### 2. Well defined and objective criteria for the reclassification of land

The criteria used for the reclassification of land need to be clear and universally understood. If land is released as a result of a General Survey, the detailed process allowing a decision to authorise land release should be described and, to the degree possible, quantified. Reclassification can be based on qualitative and quantitative measures. The first implies clear criteria for measuring the confidence in survey information. Information provided by soldiers who laid the mines may be considered more credible than information provided by a villager who recently moved back into an area. Quantitative measures may involve the type of information and the number and variety of information sources.

**Table 8** | Quantitative and qualitative factors

| Quantitative | Qualitative |
|---|---|
| > The number of local information sources | > The credibility of local information sources<br>> Informants' time of exposure to the mine problem in the area |
| > Several different information sources | > Survey team were able to access the area<br>> Information provided by e.g. military who laid the mines, military officials who did not lay the mines, police etc.<br>> Cross checking of information provided by different sources |
| > Access to mine maps | > Accuracy of mine maps<br>> Do mine maps correspond with the findings on the ground or the opinion of information sources? |
| > Records of military activity in the area | > How clear are the records |
| > Evidence of military activity | > Were mines always/sometimes/rarely used as part of this military activity |

### 3. A high degree of community involvement

There needs to be a level of confidence, genuinely accepted and agreed between the operators and the population with the local authorities. A high level of local contributions to major decisions will ensure that land is used appropriately after it has been released. Local participation should be fully incorporated into the main stages of the process in order to render the entire process more accountable, manageable and ultimately cost-effective.

Community involvement should also include vulnerable groups living in or near suspect areas, since their perspective of risk is likely to differ from other members of the community, mainly due to the inelasticity of their survival buffer, which makes them balance various risk factors regularly and often place their risk tolerance threshold lower than the community average. Vulnerable groups may include the very poor, the elderly, and the disabled or new settlers – segments of the population who may deliberately enter and use SHA as part of their survival strategy.

### 4. A formal process of handover of land prior to land release

The involvement of the local communities in the process leading to the release of land should be reinforced by a formal process of handing over land. It should include a detailed description of the survey methodology and the risk assessment. It should be signed by the future users of the land, the local community authorities, representatives from the organisation that carried out the assessment and the national authorities. An example of a handover document (used in Lebanon) is found in Annex C.

### 5. An ongoing monitoring mechanism after handover

Post-clearance and post-release monitoring must be properly planned and agreed between the different parties. This will help measure the impact land release has on local life, clarify issues related to liability in case of accidents and follow up on post-clearance or post-cancellation of the land (i.e. local management of permanent marking). This approach is important especially when it effectively uses current social and political structures to carry on the work of land monitoring, marking, information updating, etc.

### 6. A formal national policy on liability issues

The absence of a national policy that addresses issues related to liability is likely to impede the process of effectively releasing land. It is therefore important that the national mine action authority, on behalf of the national government, develops a policy that details the shift of liability from the survey organisation to the government or the local community. The shift in liability may be tied in with the requirements for a open survey and assessment process. An organisation failing to demonstrate that it has followed the national policy may for example be liable in the case of accidents or evidence of mines in previously released land. If it is demonstrated that the organisation undertaking the survey and assessment has used a methodology which has been endorsed by the Government, liability in case of later mine accidents typically lies with the Government.

### 7. A common set of terminology

The case studies show that countries use different terminology to describe broadly the same processes. It may be appropriate to adapt a global set of terminology. Some terms tend to be interpreted in different ways and should either be more clearly defined or not used at all. Some of the terms most commonly used and discussed are shown in Table 9.

**Table 9** | Terminology

| Current scenario and terminology in use | Discussion | Proposed new definitions and use of terminology |
|---|---|---|
| Cancelled area | A cancelled area is defined as a previously SHA that no longer presents a risk from mines and ERW as a result of general and technical survey. In principle there is no difference between land no longer posing a risk from mine/ERW as a result of general/technical surveys and full clearance. Some organisations have, however, made distinctions and use the term "cancelled area" only where land has been reclassified from a general survey. This is mainly because of a need to distinguish between the use or not of technical assets in a wider process. | The IMAS definition of cancelled area may not be necessary in the future. If it is to remain, it should be defined more generically, to describe **any** land that no longer presents a risk from mine/ERW. It may be more appropriate, however, to use the generic term "Land released by general survey". |
| Area reduction or reduced land | Area reduction describes a process of reducing a large SHA to a smaller SHA (IMAS 04.10). In this respect, reduced land is the smaller amount of land remaining after false positive SHAs have been identified and reclassified. IMAS does not specify a technical survey requirement for area reduction. The term is, however, typically used to describe SHAs that have been identified and reclassified as a result of technical survey. In some cases, the use of assets in parts of the SHA will allow the release of other parts of the SHA without using technical assets in these parts. These areas are reported by some as cancelled and by others as reduced. There is, thus, confusion in the use of the terminology. | There is a clear difference between the real meaning of the term "area reduction" and the perceived use of it. This should be better clarified in IMAS 04.10 para 3.16. The term may be used to describe the overall process, while when describing the actual land that no longer represent a risk as a result of a technical survey, it may be more appropriate to use the generic term "Land released by technical survey". |

**Table 9** | Terminology

| Current scenario and terminology in use | Discussion | Proposed new definitions and use of terminology |
|---|---|---|
| Cleared land | IMAS defines as "an area that has been physically and systematically processed by a demining organisation to ensure the removal and/or destruction of all mine and ERW hazards to a specified depth". This process is also referred to as "full clearance". Manual mine clearance, the use of two accredited dogs and some machine systems may qualify as full clearance. If a more limited approach has been used, for example the use of only one dog, this is typically referred to as a technical survey approach. | Since there are different degrees of clearance involved in the combined process of general survey, technical survey and demining, it may be appropriate to use the term "Land released by full clearance". This term will also complement the proposed terms above. |
| Land that no longer represent a risk from mine/ERW | This definition is commonly used to describe a situation where there is no longer suspicion of mines. The term "risk" is understood in this context as "probability" but the meaning of risk is different. The mine ban treaty defines the same scenario as "no known minefields". IMAS further describes tolerable risk as a small risk that will remain after "using all reasonable effort" to make sure that there are no mines in an area. | Various terminology are applied, including "reclaimed land", "cancelled land", "reduced land", and "cleared land". In the generic sense, it may be more appropriate to use the term "Land release" or "Released land" as a common denominator for all land that was once SHA but is no longer. |
| Technical survey | IMAS defines as "The detailed topographical and technical investigation of known or suspected hazardous areas identified during the planning phase". | The definition remains as a broader term describing a process where demining assets have been applied as part of the investigation. Technical survey will, however, need a better definition in terms of how it can be undertaken and the level of technical effort required under different circumstances. |

**Table 9** | Terminology

| Current scenario and terminology in use | Discussion | Proposed new definitions and use of terminology |
|---|---|---|
| Mine free | "Mine free" is not an IMAS definition but is commonly used. Most survey and clearance organisations would hesitate to make categorical statements about an area being mine free after the completion of a survey or a clearance process. | The term "No evidence of mines" is commonly used but it too fails to link the amount and quality of information provided with the conclusion. A generic term could be "No evidence of mines after adequate investigation". |

The model is not to be regarded as cast in stone; it is rather a flexible template that needs adapting, testing and adjusting by national programmes to best respond to their needs. However, if the seven principles outlined above are considered when planning land release principles, the foundations will have been laid for a successful and effective process.

## ENDNOTES

[1] A Study of Mechanical Application in Demining, GICHD, 2004, p57

[2] The Ottawa Convention establishes as an obligation to the State Party: "(to) undertake to destroy or ensure the destruction of all anti-personnel landmines under its jurisdiction or control, as soon as possible but no later than ten years after the entry into force of (the) convention."

[3] For more information on this subject, refer to Krisna Uk's Study for the GICHD, 2006, Local Perceptions and Responses to Risk. A comparative study of two Cambodian villages.

## CHAPTER 5

# BOSNIA AND HERZEGOVINA

## CHAPTER 5

### BOSNIA AND HERZEGOVINA

## 1. THE LANDMINES AND ERW PROBLEM: COUNTRY OVERVIEW

| | |
|---|---|
| **AP Mine Ban Convention country status** | State party since 1999. |
| **AP Mine Ban Convention obligation** | Destroy, or ensure the destruction of, all AP mines in mined areas by 1 March 2009. |
| **National set target** | From 2005 to 2008, BHMAC plans to reduce the suspected area by 39.5% (790.04 km$^2$). |
| **Main periods of conflicts** | 1992 - 1995. |
| **Landmine Impact Survey** | Completed in December 2003. |
| **Main affected areas** | Southern and Central BiH. |
| **Size of suspect areas** | 1,848 km$^2$ (September 2007 est.). |
| **Mines and UXO estimation** | 220,000 mines. |
| **Accident rates** | From the beginning of the war to 2005: 4,878 mine and UXO casualties. With two casualties per month (2005 est.).[1] |
| **National Mine Action Authority** | National Demining Commission through its technical branch, the Mine Action Centre of Bosnia and Herzegovina (BHMAC). |
| **Main Operators** | > 5 Governmental (Army, Entity Civil Protections and Mine Detection Dog Centre).<br>> 13 Non-governmental (local and foreign).<br>> 16 Commercial (local and foreign). |
| **Est. timeframe for clearance completion** | 25 to 30 years at current rate.[2] |
| **Start of area reduction & cancellation** | 2000. |

**National land classification system**

Category I | "Mined Area" or "Risk Area" | Land with evidences of mine/UXO contamination.

Category II | "Suspected Hazardous Area" | Land with a probability of being affected by mine and UXO.

Category III | "Areas Without Obvious Risk" | Land with no evidence of residual mine and UXO.

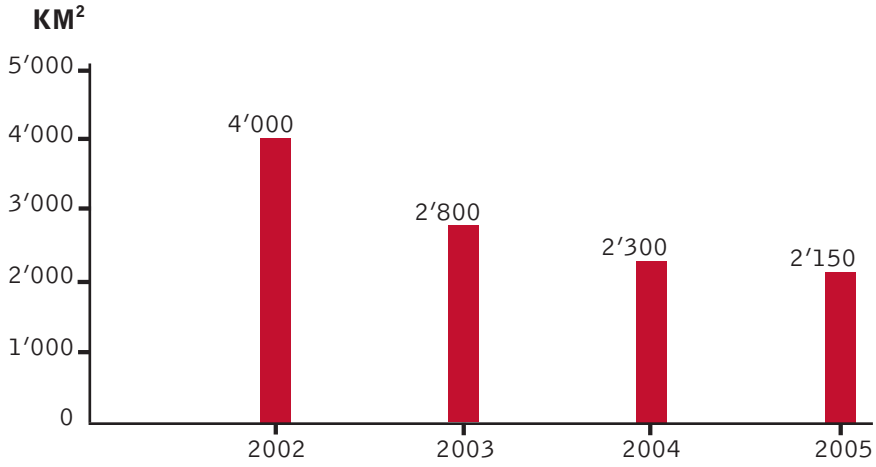
## 2. LAND RELEASE PROCESS: COUNTRY BACKGROUND

The Bosnian National Mine Action Strategy was revised in 2003-2004 due to insecure funding and a high dependency on donors. At that time, financial estimates indicated that around 1 to 1.2 billion convertible marks (approximately US$1.5 billion) were needed to meet the country's Treaty Obligation, an unviable situation in the medium and long term. Inflated time and financial projections also meant that clearance activities suffered from inadequate planning, allocation of resources and the lack of a Technical Survey. The only measurable and positive development concerned the reduction of suspected areas in the course of General Survey.[3]

The LIS was completed in Bosnia and Herzegovina (BiH) in December 2003 after which information on suspect locations was entered into the database and regular General Surveys were carried out. The General Surveys soon revealed that the boundaries of SHA were too vague. This ambiguity had caused the mine/UXO problem in BiH to be overestimated and it also led to some suspect areas being left outside LIS identified polygons.

Accurate estimates, based on General Surveys, subsequently made it possible to achieve detailed categorisation of suspect areas in relation to priority setting and classification of mine-affected communities. As a result, existing databases were continually updated and the total recorded SHA progressively reduced, as shown in Figure 1.

**Figure 1** | Bosnia & Herzegovina Area Reduction



## 3. LAND RELEASE PROCESS: AIM AND OBJECTIVES

The national mine action strategy aims to reduce suspect areas in high- and medium-impacted communities. This will be complemented by extensive marking of remaining areas, where they are known, or suspected minefields. For the 2005-2008 period, BHMAC plans to reduce its mine/UXO suspected area by 790.04 $km^2$ (39.5% of total SHA) through general assessment, qualitative survey, data gathering, risk assessment and identification of actual minefields. This reduction is planned to reduce land from the following categories:[4]

- Highly impacted communities 34.47% (213.82 $km^2$).
- Medium impacted communities 47.97% (337.34 $km^2$).
- Low impacted communities 76.70% (238.88 $km^2$).

## 4. BOSNIA AND HERZEGOVINA LAND RELEASE PROCESS

**Bosnia & Herzegovina |** Process for Land Release

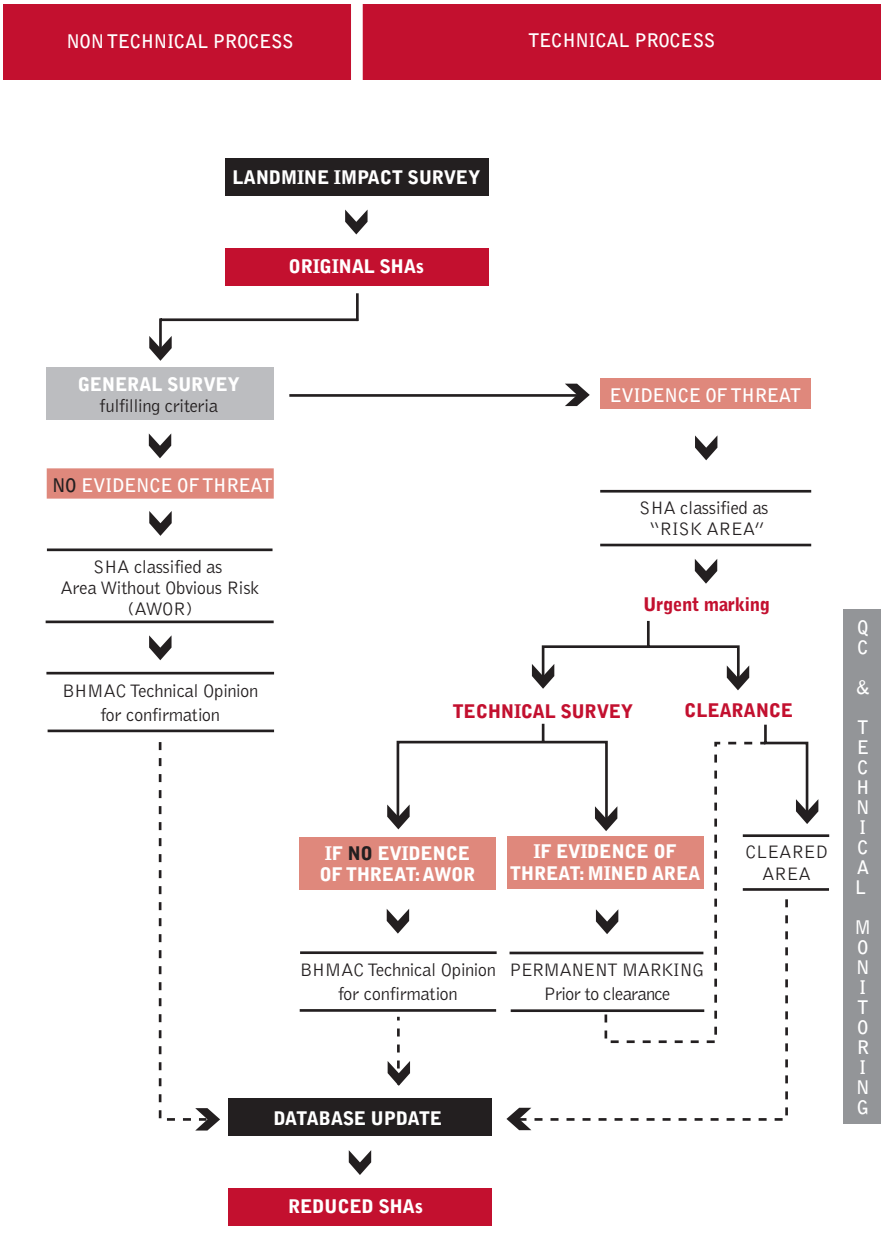


**Table 1** | Bosnia criteria for false positive SHA release

**Criteria** An area can be declared as an Area Without Obvious Risk (AWOR)[5] only if "intensively used" during the post-war period, without any incidence of accidents. The following criteria are necessary for the reclassification of a SHA into AWOR: ploughed or excavated at least once with disturbance to a minimum of 10cm into the ground; areas for building projects, roads, railroads, etc.; areas which were used for sawing and pasture as well as tarmac, concrete or stone areas which cannot be disturbed without leaving visible evidence.[6]

**Comments** Criteria for declassification follow straightforward rules yet are loosely time bound. In fact the expression "intensively used" may leave room for variable interpretations and therefore subjective decision-making. For a more detailed approach see the Croatian set of criteria.

**Table 2** | Decision-making and document trail of the Bosnian AWOR process

| Stage Number | Persons / Bodies Responsible | Activity | Documents Used/Produced |
|---|---|---|---|
| 1 | Governmental entity (Cantons – Regions, municipalities) | Request information on suspect areas | N/A |
| 2 | BHMAC Office, Banja Luka, Sarajevo & BHMAC Operations dept database & BHMAC Operation dept inspection | Plan survey/prepare reliable information | Maps, accident data etc. |
| 3 | BHMAC Regional Office Survey Team | Undertake survey | Survey Report |
| 4 | | **If NO threat evidence**<br>**If ALL required criteria fulfilled** | |
| 5 | BHMAC Regional Office Survey Team & Chief Regional Office | Declare land as Area Without Obvious Risk (AWOR) | Record of the handover of the surveyed area |
| 6 | BHMAC Regional Office Survey Team & Chief Regional Office | Request technical opinion from BHMAC office | Technical Opinion (form) |
| 7 | BHMAC inspection bodies | Validate the decision for new AWOR status | Technical Opinion |
| 8 | BHMAC Regional Office Survey Team & Chief Regional Office | **If THREAT suspected request for Technical Survey and/or clearance** | Record of the handover of the surveyed area |

**Table 2** | Decision-making and document trail of the Bosnian AWOR process

| Stage Number | Persons / Bodies Responsible | Activity | Documents Used/Produced |
|---|---|---|---|
| 9 | BHMAC Regional Office Technical Survey team | Undertake technical land investigation | Technical Survey Report |
| 10 | BHMAC Regional Office and Technical Survey team | Can request QC by Explosive Detection Dog team | N/A |
| 11 | Explosive Detection Dog team | Conduct QC by sampling method | N/A |
| 12 | | ↓ **If NO threat confirmed** ↓ | |
| 13 | Technical Survey team & Chief Regional Office | Declare land as AWOR | Record of the handover of the Technically Surveyed Area |
| 14 | Technical Survey team & Chief Regional Office | Request technical opinion from BHMAC office | Technical Opinion |
| 15 | BHMAC inspection bodies | Validate the decision for new AWOR status | Technical Opinion |

## 5. ANALYSIS OF THE BOSNIAN SYSTEM

**Concept** Both the identification and effective reduction of SHA are made possible via General Survey[7] (a non-technical approach based on in-depth information collection) and Technical Survey (a technical approach used to enter a risk area so that its boundaries are clearly defined for scheduled mine clearance).

If the outcome of the General Survey indicates no trace of mines and ERW, then the land will be declassified from being an SHA to what Bosnia refers to as an Area Without Obvious Risk (AWOR) or Cancelled Area. The declassification process is then confirmed and officially validated by the BHMAC before this new status is recorded in the database. According to Lisica, the process of area reduction in BiH is particularly complex since changes occur on a continual basis, thus making them difficult to record and monitor regularly. In this case it is likely that the demining operator may want to conduct another round of survey or "re-survey" to ascertain whether the land has shown a detectable threat in the meantime.

General Survey reduces suspected areas until verified records are established and/or suspicion of mine presence is confirmed. These areas then become categorised as Risk Areas and will be subject to Technical Survey and clearance. Technical Survey will be conducted to draw the boundaries of confirmed minefields or places where there is a serious probability of mines existing. If traces of mines and UXO are still not found, the land will not need to be subject to clearance and will instead be categorised as an AWOR.[8] If a potential mine threat exists then the next stage will involve land clearance. Technical Survey itself comprises two distinct yet complementary processes: one exclusively technical, which requires land to be cleared and handed over to the communities, and another which reclassifies suspect land following investigation and confirmation that there is no threat.

Despite the practicality of the system, designed to respond to various scenarios, it is not clear whether land that has been reclassified AWOR (either via the process of General Survey or Technical Survey) is actually released for the immediate use of the communities; and, if so, what procedures the release process follows.

**Local participation** The selection of priority locations and affected communities is the responsibility of the local authority, i.e. the cantonal coordinator. More information is needed to assess the real contribution of communities since they should not be regarded as mere recipients; they are the driving force behind the reclassification and release of the land.

There is a current lack of detailed information as to who actively participates in land release and whether this process involves the same parties that set demining priorities in accordance with the state's social and economic plans. As a result, uncertainties in terms of assigned roles and responsibilities following land declassification, subjectivity in the decision-making process and the general need for enhanced transparency may pose obstacles to the efficiency of the entire process.[9]

**Permanent marking** Marking plays an important role in the BiH process of land release. It aims to provide the population with visual guidance as to where the safe land starts and where it ends. It draws on a Mine Risk Education process whereby unintentional entries into hazardous areas can be prevented. Permanent marking is also applied on safe land whether cleared or reclassified as AWOR. Signs are regarded as public property since they have been planned for, financed, geographically positioned and implemented by the municipalities, cantons, regions, entities and landowners. To some extent, this furthers public participation at all levels but also promotes the individual's civic duty through practice of shared responsibility, especially when signs need to be maintained.

**QC/QA and monitoring** The BHMAC Technical Monitoring teams conduct Quality Control (QC) at different stages of the technical process where important decision making needs to be made. Following reclassification of the land from SHA to AWOR, the operator needs to seek technical input from BHMAC before confirming the changed status of the land. In order to remove all suspicion that mines may remain present, BHMAC is entitled to request QC on land that has been technically surveyed and subsequently declared AWOR. QC will be *"conducted by sampling 5% of the area which has been done by mechanical preparation or manually with Explosive Dog Detection teams"*.[10]

**Liability issue** With reference to the level of community participation, SOPs need to clearly define local roles and responsibilities, especially in case of AWOR being released and used by the population until an accident happens. Given the pressure on land resulting from internally displaced people and refugees, little has been mentioned about SHA already being used by the communities and the methodological process and decision making this issue entails.[11] For more insight on this particular issue, the Cambodian case will prove relevant.

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Darvin Lisica, 2006. *Risk Management in Mine Action Planning*. Bosnia and Herzegovina Ministry of Civil Affairs, Norwegian People's Aid, Bosnia and Herzegovina Mine Action Programme.

## ENDNOTES

[1] From 1996 to May 2005 there were 1,532 mine casualties, of which 434 were fatalities. The monthly average is in constant decrease. From 52.67 casualties per month in 1996, the number in the first five months of 2005 decreased to an average of 2 casualties per month. Most accidents occurred in March with increased rates in July and October.

[2] Estimated surface clearance a year: the annual capacity of these organisations ranges from 12.8 $km^2$ (41%) for clearance operations to 18.1 km2 (59%) for technical surveys.

[3] Lisica, D., Risk Management in Mine Action Planning. Bosnia and Herzegovina Ministry of Civil Affairs, Norwegian People's Aid, Bosnia and Herzegovina Mine Action Programme, 2006.

[4] BiH Mine Action Strategy 2005-2008.

[5] See Annex A for Country's Technical Expressions and Specific Definitions.

[6] BiH Standards part 2, p 16/96.

[7] The Bosnian model is built on a combined "Systematic Survey" (suspected area – as the least exact image of mine hazard) and "General Survey" (risk area – as a result of further measurements and collections of data about an area and its risk without entering it). This document focuses on the more detailed type of survey, which allows for more accurate information on the SHA status.

[8] BiH standards part 2, p17.

[9] BHMAC Integrated Approach at the Community Level.

[10] BiH SOPs Part II, p. 3.

[11] According to Lisica the following questions are relevant to the future development of mine action integrated planning: "How to improve the participation of the community itself in the realisation of a mine action plan? How to increase the community's resistance to mine hazard? To what extent can a community identify risk priorities? What is a tolerable risk for the affected groups?"

# CHAPTER 6

## CAMBODIA

## CHAPTER 6

## CAMBODIA

# 1. THE LANDMINES AND ERW PROBLEM: COUNTRY OVERVIEW

| | |
|---|---|
| **AP Mine Ban Convention country status** | Ratified in 1999. |
| **AP Mine Ban Convention obligation** | Destroy, or ensure the destruction of, all AP mines in mined areas by 1 January 2010. |
| **National set target** | Landmine and UXO impact free by 2012. |
| **Main periods of conflicts** | Thirty years of conflicts since 1970s. |
| **Landmine Impact Survey** | Completed in 2002. Terminology in Cambodia classified it as a Level 1 Survey. |
| **Main affected areas** | Northwest on the K5 mine belt running along the Thai border (700km), Northeast and Southeast (mostly ERW). |
| **Size of suspect areas** | 4,446 km$^2$ (or 2.5% of the total land surface area). |
| **Mines and UXO estimation** | Between 4 to 6 million. |
| **Accident rates** | 2004 = 898 landmine/UXO casualties.<br>2005 = 875.<br>2006 = 450. |
| **National Mine Action Authority** | Cambodian Mine Action and Victim Assistance Authority (CMAA). |
| **Main Operators** | Cambodian Mine Action Centre (CMAC), The HALO Trust, MAG, Royal Cambodian Armed Forces (RCAF). |
| **Est. timeframe for clearance completion** | Areas directly affecting people's lives can be cleared in "10-15 years time if fully funded and well managed".[1] |
| **Start of area reduction & cancellation** | Officially implemented in 2006. |

**National land classification system**

Category I | Non suspect land | Land that is identified as not affected by mine/UXO;

Category II | "Suspected land" | Land that is identified as contaminated by mine/UXO;

Category III | "Reclaimed land" | Suspect land that has been returned to productive use locally for 3 years with no accident recorded; and

Category IV | "Cleared land" | Suspected or reclaimed land that has been professionally cleared of mine/UXO.

## 2. LAND RELEASE PROCESS: COUNTRY BACKGROUND

Despite more than 15 years of demining activities, the Cambodian national mine action authority – the Cambodian Mine Action and Victim Assistance Authority (CMAA) – has said it is unlikely that Cambodia will be able to meet its obligation under the Mine Ban Treaty and complete clearance by 2010. Having moved beyond a humanitarian situation that necessitates emergency clearance, the national strategy requires a reduction in the size of mine/UXO suspected areas and, more importantly, aims to lessen the adverse impact affected land has on the 75-85% of the local population dependent on the primary sector.[2]

The scale of the landmine and UXO problem and the slow pace of professional clearance[3] have contributed to a re-assessment of the current mine action strategy. A joint evaluation undertaken in 2004[4] recommended that *"areas that are already in use and that are presenting no problem to existing communities"* should be withdrawn from clearance plans. The following year a national study on ERW[5] concluded that the actual mine action strategy was not responding to the fact that village-based land reclamation was happening simultaneously in areas where population pressure on suspected hazardous land is high. The study concluded that *"accelerating the end of the landmine impact is attainable through innovative area reduction techniques. The remaining high-impact border contaminated areas can arguably be reduced within a 5-10 year period".*[6]

In 2005, the demining rate increased by more than 63 per cent owing to the operators' improved clearance of high risk areas and the reclassification of all suspected land already put under cultivation by local communities where there had been no accidents over a three-year period. This reclassification process formed the basis of the national area reduction policy, which was developed by CMAA together with the operators and endorsed by the government in May 2006. This land release may help meet the objective of effectively reducing the impact of mines and UXO in the foreseeable future. The impact free target, to be reached by 2012, commits to making mine action efforts more visible as financial support from donor countries has decreased in the past few years. In 2004, ICBL reported that mine action funding totalled US$25.6 million, including government contributions, as against US$41.7 million the previous year. Since 2005 yearly accident rates have declined drastically from 875 to 450, which may infer that enhanced mine action planning, in which the systematic reclassification of reclaimed land, plays a pivotal role.

## 3. LAND RELEASE PROCESS: OBJECTIVES

**Objective I** "To reclassify the previously recorded mine suspected land that has been returned to productive use in order to update the national mine contamination database."

**Objective II** "To improve mine clearance planning by targeting clearance on areas posing the greatest risk to the communities, and by doing so, recognise lands which have been returned to productive use without evidence of threat by recording them in the national mine contamination database."[7]

## 4. CAMBODIAN LAND RELEASE PROCESS

**Cambodia |** Process for Land Release

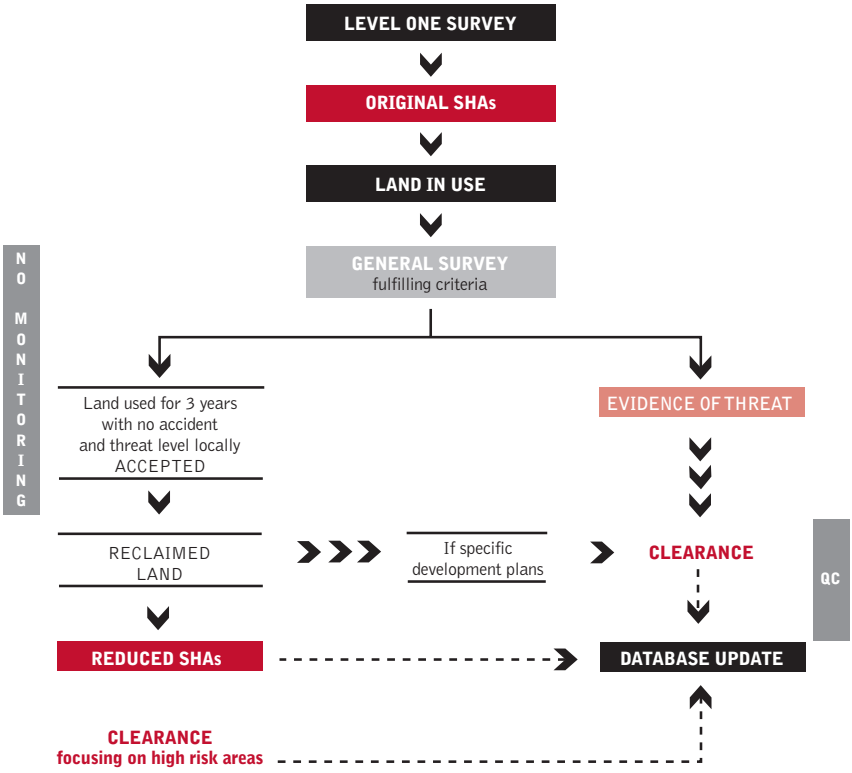

**Table 1** | Cambodia criteria for false positive SHA release

| |
|---|
| **Criteria** The suspect land has been spontaneously reclaimed and used by the communities for a period of three years during which no accident has occurred. However, clearance becomes mandatory if a specific project (i.e. infrastructure reconstruction or development) is proposed in an area already reclassified as "reclaimed" therefore "cancelled" from the national database. |
| **Comments** The criteria for reclassifying land without undertaking clearance are straightforward. There is no detailed requirement as to the specific type of land use (i.e. type and depth of cultivation) nor whether the three years cultivation period needs to be continuous (i.e. yearly cultivation but not seasonal cultivation, which involves periods when the land is left untouched). Since the CMAA does not produce detailed procedures, operators use their own SOPs in conformity with Cambodian Standards. In theory, they also base their operational decision making on accepted level of risk whereby communities decide the extent which land is not locally viewed as hazardous anymore. If reclassified land subsequently poses a threat to the users, professional clearance will be undertaken. |

Decision-making and document trail Due to the current lack of standard national procedures the demining operators use their own SOPs and take their land release decisions accordingly.

## 5. ANALYSIS OF THE CAMBODIAN SYSTEM

**Concept** The Cambodian model of land release takes into account the social and economic dynamic prevailing in SHA. Growing population pressure, internally displaced people and new settlers in search of arable land often lead to both suspected and confirmed minefields being reclaimed and utilised.

The model is based on extremely simple criteria whereby land that has already been used can shift categories from presenting HIGH or MODERATE risk to LOW or, more importantly, ACCEPTED risk. Past clearance activities and in-depth surveys performed by the HALO Trust have demonstrated that suspected or confirmed areas along the K5 mine belt have already been reclassified by local users because yearly cultivation has confirmed that no or very few items remained in the soil. This is either due to the LIS integration of low risk areas into large polygons of false positive SHA or due to clearance undertaken by the villagers themselves.

**Translation of the original concept** While the National Area Reduction Policy was originally written in English, some of the meanings and concepts have been lost in translation and subsequent re-translation. One of these shifts in meaning concerns the complex issue of risk acceptability. The early version clearly mentions that because of limited clearance resources, suspect land that has been used and which presents a certain degree of threat already accepted by the population does not require clearance. The Khmer

version emphasises the fact that the population has already determined its acceptable risk level and that clearance agencies need to take this into account when releasing land. Conversely the English version states: *"Reclaimed land is not considered as cleared land. Rather it should be viewed as land where the threat has been reduced to a level that is acceptable to the locals."*[8] The direct translation from the original version would read: *"Rather it should be viewed as land where the threat has been reduced to a level that has been accepted by the local population."* This discrepancy has significant consequences not only in properly determining "accepted level of risk" but also in ensuring that the entire process is indeed driven by the community, which is willing to take full responsibility for land not subject to professional clearance. This will thus prevent subjective operational decisions whereby risk levels are imposed on the intended beneficiaries.

**Local participation** It is not entirely clear how the process of declassifying land works in terms of involving the communal, district and provincial authorities. The Mine Action Planning Units (MAPUs)[9] play an important role in bringing clearance requests to the commune and district levels. With respect to the process of land release, however, the MAPUs' role is limited to collecting reclaimed land information on a standard report form and helping update the national database. Moreover the annual work plans, which are finalised at the provincial level through the Provincial Mine Action Committees (PMACs), would probably gain from being more involved and/or better informed about the land release decision-making process as this affects land-related and social and economic development of areas that are directly placed under their jurisdiction.

The role of the MAPU is to ensure that demining priorities and tasks genuinely involve affected communities in the various decision-making stages leading to land being cleared. Equally its specific role (and the wider role of the local authorities) in deciding which areas would not need clearance should be maintained if not strengthened. As such, the Area Reduction Policy fails to define clear roles and responsibilities whereby operators, local and national authorities as well as the villagers themselves have a stake in the entire process.

**Spontaneous land release or "village demining"** Village demining is a significant occurrence in Cambodia, despite being illegal under Cambodian law. It raises complex issues in terms of liability, standards and risk tolerance levels but is nonetheless an important feature of the current land release practice. Land release via village demining encompasses land that may originally have been severely mined but has now been cleared to a locally accepted risk level and returned to productive use. In-depth General Survey with land users may confirm that land being used presents tolerable risk to them for which further professional clearance would be unnecessary

or redundant. In this context, "reclaimed land" by no means implies that the land is free from mines or UXO; it only indicates that the user is fully aware of the potential danger and therefore views the risk as presently manageable.

**QC/QA and monitoring** There is currently limited information as to how much QC, QA and/or monitoring is done during the land release process. As operators proceed according to their own SOPs, monitoring may be undertaken at the stage of the General Survey prior to reclassification. However there seems to be no confirmation of follow up on land that has been cancelled and neither the MAPU structure nor local authorities have the means and/or assigned role to undertake this type of monitoring.

**Liability issue** The above situation calls into question the liability of either the operators or the landowners or local authorities themselves for accidents happening on land that has been officially reclassified and cancelled out of the SHA. The Croatian case may offer a useful point of comparison, as it clearly addresses issues of liability and uses permanent marking on areas that, although used by the communities, still present a potential threat.

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## ENDNOTES

[1] Griffin and Keeley, Joint Evaluation of Mine Action in Cambodia for the Donor Working Group on Mine Action. Phnom Penh, 2004.

[2] Cambodia Inter Censal Population Survey (CIPS) 2004.

[3] As opposed to village demining – a common scenario in Cambodia.

[4] Griffin & Keeley, op cit

[5] ibid

[6] McCracken, National Explosive Remnants of War Study, NPA/CMAA, Phnom Penh, 2006

[7] CMAA, 2006, Area Reduction Policy.

[8] ibid, page 6.

[9] The role of the MAPU is to ensure better community participation, clarification of the process of demining requests and decision-making as well as effective information collection and analysis to ensure that clearance priorities directly respond to the level of risk posed by mines and UXO contamination.

CHAPTER 7

# CROATIA

# CHAPTER 7

## CROATIA

## 1. THE LANDMINES AND ERW PROBLEM: COUNTRY OVERVIEW

| | |
|---|---|
| **AP Mine Ban Convention country status** | State party since 1999. |
| **AP Mine Ban Convention obligation** | Destroy, or ensure the destruction of, all AP mines in mined areas by 1 March 2009. |
| **National set target** | Target down to 320 km$^2$ (28% of the total suspected area) by 2009. |
| **Main periods of conflicts** | Early 1990s: four-year period of conflicts. |
| **Landmine Impact Survey** | 2003-2005 (Phase 1).<br>2005-2007 (Phase 2). |
| **Main affected areas** | 12 of 21 counties of Croatia affected by landmines and UXO. |
| **Size of suspect areas** | 993.7 km$^2$ of confirmed and suspected mined areas as of 27 September 2007. About 1.1 million people are believed to live in 121 mine-affected municipalities. |
| **Mines and UXO estimation** | 1 million mines and UXO spread over 170 km$^2$. |
| **Accident rates** | Between 1990 and 2006, the CMVA database recorded 1,804 mine/UXO casualties. The recent trend is downwards, from 16 in 2004 to 12 in 2005. |
| **National Mine Action Authority** | The Croatian Mine Action Centre (CROMAC). |
| **Main Operators** | 27 commercial operators and Norwegian People's Aid. |
| **Est. timeframe for clearance completion** | 30 years at current demining rate. |
| **Start of area reduction & cancellation** | 1998. |

**National land classification system**

Category I | Confirmed mined areas | Land that is identified as contaminated by mines/UXO;

Category II | Mine Suspected Area (MSA) | Land that is identified with degrees of probability of being contaminated by mine/UXO. The MSA is composed of three sub-categories as follows:

- Sub-Category II. A Areas for Demining (existence of reliable data on systematic mine-laying);
- Sub-Category II. B Areas for Technical Survey (need for additional data collection with the aim of verifying mine and UXO presence);
- Sub-Category II. C Areas Used at One's Own Risk/Peril (based on the estimation of mine contamination of an area or building where clearance is not feasible due to persistent use of the land by local individuals).

## 2. LAND RELEASE PROCESS: COUNTRY BACKGROUND

The Croatian SOPs were developed in 2003 drawing on the country's past experience. Amendments have been introduced progressively to ensure compliance with the law on Humanitarian Demining and other relevant regulations. One of the most important changes resulted from the feedback provided by survey officers who conducted a more in-depth survey, or General Survey, in order to refine the original findings of the LIS. Another particular feature of the development of the Land Release process was the use of digital orthophoto maps (1:2,000) as a standard and harmonising tool for use with the mine information system.[1]

Following an extensive LIS conducted in 2003-2005, Croatia identified a total contaminated area of 1,174 km$^2$. Following General Survey, Technical Survey and clearance this area was effectively reduced to 1,147 km$^2$ and then 1,044 km$^2$ at the beginning of 2007. Land perceived to be at risk was classified into two major categories: "recorded minefields" or "suspected mined areas". According to CROMAC, only 10 to 15 per cent of the designated contamination area represents recorded minefields, the rest is suspected of being mine-contaminated.[2] Since the commencement of mine action, CROMAC has released 210 km$^2$ of land to the local communities using mine clearance and technical survey methods only. An additional 200 km$^2$ was released by non-technical means using a General Survey approach.

Croatia has been innovative in its approaches to land release. Since 2006, for example, the Croatian Centre for Testing, Development and Training, in cooperation with the Faculty of Agronomy at Zagreb University, has been testing the use of bees as a landmine detection and area reduction tool.[3]

## 3. LAND RELEASE PROCESS: OBJECTIVES

**Objective I** Croatia's first objective is to remove the "danger of mines from populated areas and areas planned for economic development, tourism, nature preservation and transport". This target area constitutes 320 km$^2$ of priority land, the contamination of which affects the everyday lives of the Croatian population. The complete clearance of this identified area will be complemented by the recording of each minefield identified during Technical Survey work.

**Objective II** The remaining 800 km$^2$ of suspected land form a second priority since it encompasses mainly forested and mountainous areas, and is less vital to the everyday needs of the population and the Croatian economy. CROMAC indicated that these areas will be subject to marking, General Survey and further area reduction and finally left to other operators such as the military for further clearance.[4]

## 4. CROATIA LAND RELEASE PROCESS

**Croatia |** Process for Land Release

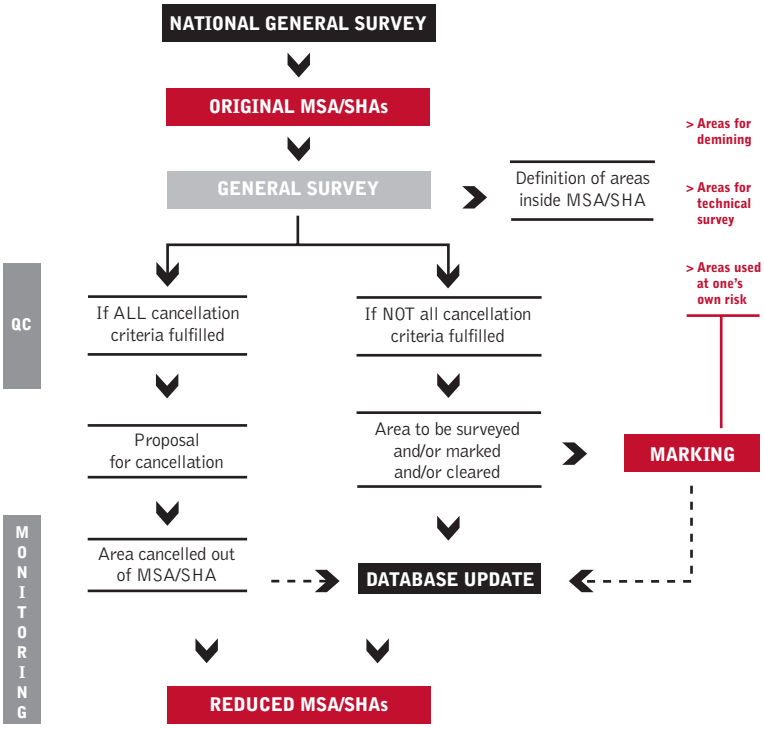

**Table 1** | Croatia criteria for false positive SHA release

**Criteria**

**1. General criteria for cancellation of surface areas and buildings out of the MSA/SHA**[5]

General criteria are applied for the cancellation out of MSA/SHA surface areas and buildings declared as mine suspected by previous General Surveys due to the impossibility of confirming all data on mine and UXO non-existence and removing any doubt of the mine threat.

Surface area and building can be cancelled out of the MSA/SHA when data is collected by General Survey methods and the following criteria are confirmed by the analysis procedure:

a. There is no original data on mine-laying and demining;
b. There were no mine incidents;
c. There are no fortification facilities and fortification barriers showing mine and UXO existence;
d. Analysis and estimates establish that surface areas and buildings have not been used for war and military purposes or have not had any other military significance implying the possibility of residual mines and UXO (command posts, separate positions, movement of survey-sabotage team, polygons for training of armed units, etc.);
e. There were no explosions of ERW in areas previously affected by fire;
f. There were no indicators of mine-laying (discarded packaging, wrapping and military debris, minefield marking, etc.); and
g. The above criteria are confirmed by field data collection and through conversations with contact persons and/or other General Survey methods. Any doubt of mine and UXO existence is eliminated.

**2. Special criteria for cancellation of surface areas and buildings outside the MSA/SHA**

Special criteria with indicators of mine and UXO contamination are applied for cancellation of surface areas and buildings outside the MSA/SHA. General Survey methods established these surface areas and buildings as being suitable for use by local populations and other beneficiaries.

For cancellation from the MSA/SHA of surface areas and buildings that are in use, it is necessary to collect data which eliminates any suspicion of mine and UXO contamination. These data are required to establish:

> rationally acceptable time periods;
> modes of usage or cultivation for surface areas and buildings at one's own risk; and
> total number of years in which there were no human or animal casualties, cases of mine and UXO detections, explosions of ERW during fire or other indicators showing a mine threat existence.

Decisions on cancellation are based on the type and intended use of surface areas and buildings and other specific characteristics established by General Survey methods. According to the type and intended use of surface areas and buildings inside the MSA/SHA, estimated to be used at one's own risk, land to be cancelled out of the MSA/SHA following the criteria of time period and mode of usage.

**Comments** CROMAC SOPs identify the stages leading to methodological decision making. Each scenario follows predetermined sets of criteria which are characterised by specific land use and assigned a timeframe (see Annex B) thus leaving limited room for subjective judgemental decisions by the survey teams, the Head of the Survey Division and the CROMAC Director.

## CROATIA

Roles and responsibility: the system is detailed, structured with layers of controls and allows for active political involvement at different levels. The *municipality* is in charge of the operative level of mine action, the *county* is responsible for the tactical level while the *state* controls the overall strategic level.[6] Within CROMAC, the Head of the Survey Division controls and supervises the work of the Survey Teams in the field and informs the Head of the Regional Office in writing of the results. Decisions on cancellation of surface areas and buildings out of the MSA are made by the CROMAC Director, based on documented proposals from the Head of CROMAC Regional Office. The process is illustrated in Table 2:

**Table 2 |** Decision-making and document trail of the Croatian process for the cancellation of surface areas and buildings out of SHA.

| Stage Number | Persons / Bodies Responsible | Activity | Documents Used/Produced |
|---|---|---|---|
| 1 | Head of CROMAC Regional Office | Submit documented proposal for cancellation to Operations Division | Proposal for the cancellation of surface areas and buildings out of the MSA/SHA in two copies |
| 2 | Survey and Operations Planning Department | Verify the proposal and submit it to Assistant Director for Operations | Proposal for cancellation |
| 3 | Operations Division | Proceed with proposal analysis | Proposal for cancellation |
| 4 | At the request of Operations Division, IT Department | Produce map representing new MSA/SHA situation | New MSA/SHA map |
| 5 | Assistant Director for Operations | Verifies the proposal and transfers it to the Support Section | Proposal for cancellation |
| 6 | CROMAC National Director | Finally approve the proposal | Proposal for cancellation |
| 7 | CROMAC Regional Office | Receive Opinion on cancellation of surface areas and buildings out of the MSA/SHA | Opinion (form) |
| 8 | ↓ | **If the opinion is positive** ↓ | Opinion (form) |
| 9 | CROMAC Regional Office | Proceed and remove mine warning signs | _ |
| 10 | CROMAC Regional Office | Submit report on changes of MSA/SHA marking to the Operations Division | Report on changes |

## 5. ANALYSIS OF THE CROATIAN SYSTEM

The Croatian model is based on a clear system of definition and reclassification of areas inside the broad SHA category. This reclassification follows specific criteria making the model highly procedural and consistent (see Annex B). CROMAC SOPs also ensure that roles and responsibilities of relevant authorities and professional organisations are well described to allow for better collaboration between demining operators and the local authorities. This approach allows for a clear, systematic and monitored approach to land release.

**Information collection** The concept is centred on detailed procedures for carrying out survey and information analysis. This level of precision helps to guarantee the quality of the information gathered. The non-technical process of information collection involves interviews with informants and is the source of all relevant data on MSA/SHA and confirmed minefields.

The approach is then complemented by the positioning of these data on a topographic map in addition to other relevant field observation (facilities, soil conditions etc.).

**Defining the Areas inside the Mine Suspected Areas (MSA)** by General Survey facilitates priority settings and information management according to demining methods.[7] The MSA/SHA is composed of three sub-categories: (1) Areas for demining, (2) Areas for Technical Survey and (3) "Areas used at one's own peril". Given the possibility that the status of land may change, these sub-categories do not form discreet groups since a piece of land can shift from one sub-category to another.

**Regular database update and information cross-checking** New data is continually registered, verified, analysed and linked so as to exclude any possibility of false positive SHA. The notes on daily activities and information collected by General Survey methods are taken by the Survey Team and used for further survey procedure and preparation of General Survey report. CROMAC also manages the Mine Information System (MIS), which stores and provides mine action related information nationwide. The MIS has the advantage of being compatible with the current information system used by the state administration, which allows for greater collaboration, information sharing and updating. According to CROMAC, a number of counties and municipalities have digitised cadastral plans that they can access directly via intranet. It is expected that this system will be extended to the remaining counties and municipalities in the entire country in the forthcoming years.

**Participation of local and national authorities** General Surveys are carried out in cooperation with representatives of local administration, the Ministry of Interior, the Croatian Army, public companies and members of the local population.[8] Maps of MSA/SHA are distributed to county officials, municipalities, police departments and any other administrative bodies and/or individuals that request the information.

**Cancellation criteria** Cancellation of surface areas and buildings in use from the MSA/SHA,[9] requires the collection of relevant data that can eliminate any suspicion of mine and UXO contamination.[10] Criteria for cancellation are strictly time bound and are dependent on the land use. For each type of cultivation and topography a timeframe is assigned under which the land is not considered safe enough to be used and is therefore still suspect. It is categorised as "used at one's own peril" if the land is used despite CROMAC's assessment that a threat exists. It is thus required to establish *rationally acceptable criteria* such as: time period and mode of usage, cultivation of surface areas and buildings at one's own risk (total number of years since combat activities stopped), in which there were no human or animal casualties, recorded cases of mine and UXO detections, explosions of ERW during fire and other indicators showing mine threat existence.

Surface areas and buildings can be declared safe and removed from the MSA/SHA when all available data is collected by General Survey methods and the analysis procedure show that all criteria for cancellation have been fulfilled. Criteria for cancellation of surface areas from the MSA/SHA are very demanding: they require all relevant data and detailed analysis (with no oversights and exceptions) for making decisions.[11]

Once classified as "at one's own peril" or "cancelled", the status may be changed by the CROMAC regional office. The present system therefore plans for re-categorisation of the land if needed. In common with the Lebanese model, the national demining agency states that the national database should allow for continual update of the status of the land even following declassification.

**QC/QA and monitoring** The Head of the Survey Division maintains regular contact with the Survey Team in order to monitor the execution of the field survey. Maintaining contact and reporting on the situation is mandatory at the beginning and end of the Survey Team's daily work. The survey report, which forms the essential documentation in the land cancellation process, is prepared by the CROMAC Survey Team leader and verified by both the Head of the CROMAC Regional Office and the Assistant Director for Operations in the Operations Division. The report is an official document that will be used by CROMAC for further mine action activities and collaboration within the municipal areas.

**Liability issue** CROMAC SOPs state that data collection via General Surveys necessitates continuous monitoring of the MSA/SHA status, marking with mine warning signs and providing information to the community on the situation.

**Area used at one's own peril** In Croatian (*"korištenje na vlastitu odgovornost"*) the terminology emphasises that *responsibility* is discharged from the operators towards the land users. According to the result of a 2004 survey, 3 per cent of the MSA/SHA are used on the basis of "at one's own peril", a sub-category on its own. Justification for definition of MSA/SHA used at one's own peril is based on the analysis and estimate of mine and UXO prevalence. Following the method of surface area cultivation used, mines and UXO were not detected over the course of a time period that is shorter than the one set by the cancellation criteria. The user's responsibility is documented in the relevant forms in which the user is a conscious agent willing to take risk despite professional advice to leave the area untouched. According to CROMAC, "the decision on cancellation of surface areas and buildings out of the MSA used at one's own peril is based on the *type and intended use of surface areas and buildings* as well as other specific characteristics established by (General) Survey methods".

There is usually no clearance occurring on such type of land unless the county makes it a priority and formulates a special request for clearance. Furthermore, surface areas "used at one's own peril" are marked with mine warning signs with the aim of informing the population of the potential mine threat. In exceptional cases, if the user does not accept marking and/or wilfully removes the signs, CROMAC Regional Office is obliged to inform local administration bodies in writing of reasons why the area has not been marked. In case of accidents CROMAC will not be liable and a police investigation will follow.

CROMAC's database records the position of all marking signs, which also appear on maps distributed to the authorities for shared responsibility and/or follow up. Moreover "areas used at one's own peril" are not marked a different colour from other risk areas. CROMAC considers such type of land as integral to the MSA/SHA. Until the moment it undergoes cancellation or clearance, land is considered by the authorities to contain the same level of threat as any other MSA/SHA.

## 6. SELECTED BIBLIOGRAPHY

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ICBL, *Landmine Monitor*, 2006.

## ENDNOTES

[1] CROMAC does not use IMSMA but its own adapted Mine Information System.

[2] ICBL, Landmine Monitor, 2006.

[3] ibid.

[4] ibid.

[5] CROMAC SOPs 6.2.1 & 6.2.2.

[6] Goršeta D. 2003. Multicriteria Analysis Application in Mine Action, Journal of Mine Action: Issue 7.2. August 2003.

[7] In accordance with CROMAC SOP.

[8] Planning and prioritisation of mine action is undertaken at the municipal and county levels, based on maps and data of confirmed and suspected mined areas sent by CROMAC twice-yearly. Municipalities submit their demining priorities to county authorities who also take account of development plans in setting regional demining priorities. From these, CROMAC drafts annual plans for approval by ministries and then by the government (ICBL, Landmine Monitor, 2006).

[9] The English expression "cancellation of mine suspected area" is an accurate translation of the original Croatian "*isključenje površina iz MSP-a*".

[10] CROMAC SOPs section 6.2.1. General Criteria for Cancellation of Surface Areas and Buildings Out of the MSA.

[11] ibid.

CHAPTER 8

# IRAQ

# IRAQ

## 1. THE LANDMINES AND ERW PROBLEM: COUNTRY OVERVIEW

The following table summarises the landmine and ERW situation in Iraq. The description of the land release processes considers the processes in place in areas under the responsibility of the General Directorate of Mine Action (GDMA) Sulaimaniyah.

| | |
|---|---|
| **AP Mine Ban Convention country status** | Treaty formally acceded 15 August 2007. |
| **AP Mine Ban Convention obligation** | Destroy, or ensure the destruction of, all AP mines in mined areas by 1 February 2018. |
| **Main periods of conflicts** | 1967–1974 = internal conflicts.<br>1980-1988 = war with Iran.<br>1991 = Gulf war.<br>2003 = Invasion of US led coalition forces. |
| **Landmine Impact Survey** | Completed April 2006 in 13 of 18 governorates of Iraq. |
| **Main affected areas** | The Kurdish governorates with 1,428 affected communities. 1,400 km border along Iran and Southern-Central governorates. |
| **Size of suspect areas** | 3,548 km$^2$. |
| **Mines and UXO estimation** | 1,428 affected communities in the Northern Governorates and thousands of tactical minefields on the Turkish and Iranian borders and along the Green Line. |
| **Accident rates** | 2005: 358 casualties. |
| **Mine Action coordination body** | Iraq National Mine Action Authority. |
| **Operators** | MAG, NPA, Ararat Company, Asa Company, Khabat Zangana Company, Chamy Rezan Company, Bafreek Company, Aras Company, Rumital Company (Croatian). |
| **Est. timeframe for clearance completion** | Impact Release by the year 2018 (based on UNOPS strategic Planning during 2002). |
| **Start of area reduction & cancellation** | GDMA Sulaimaniyah started in 2005. |

**National land classification system**

Category I | Dangerous Areas | Land located inside identified minefield boundaries where the presence of mines, UXO and booby traps has been confirmed.

Category II | Fade-Out Areas | Specific surface area immediately located outside the actual minefield.

Category III | Released Areas | All land previously reported and classified as "suspected" by the LIS team, which has been declassified following detailed survey and/or technical survey and clearance of relevant suspected areas.

## 2. LAND RELEASE PROCESS: COUNTRY BACKGROUND

Following the completion of the LIS in 2006 and the first identification of the minefield boundaries, mine clearance operations confirmed that a very large proportion of safe areas were mistakenly included within real minefield boundaries. To address this issue and limit the ineffective management of limited clearance resources, the concept of land release was developed in order to properly identify false positive SHA and to remove them from the category of real hazardous land.

## 3. LAND RELEASE PROCESS: AIM AND OBJECTIVES

The aim of the process in the GDMA Sulaimaniyah is to identify uncontaminated areas within land demarcated as SHA and to release them safely so that demining efforts concentrate effectively on real minefields.

## 4. GDMA SULAIMANIYAH LAND RELEASE PROCESS

**Iraq |** Process for Land Release

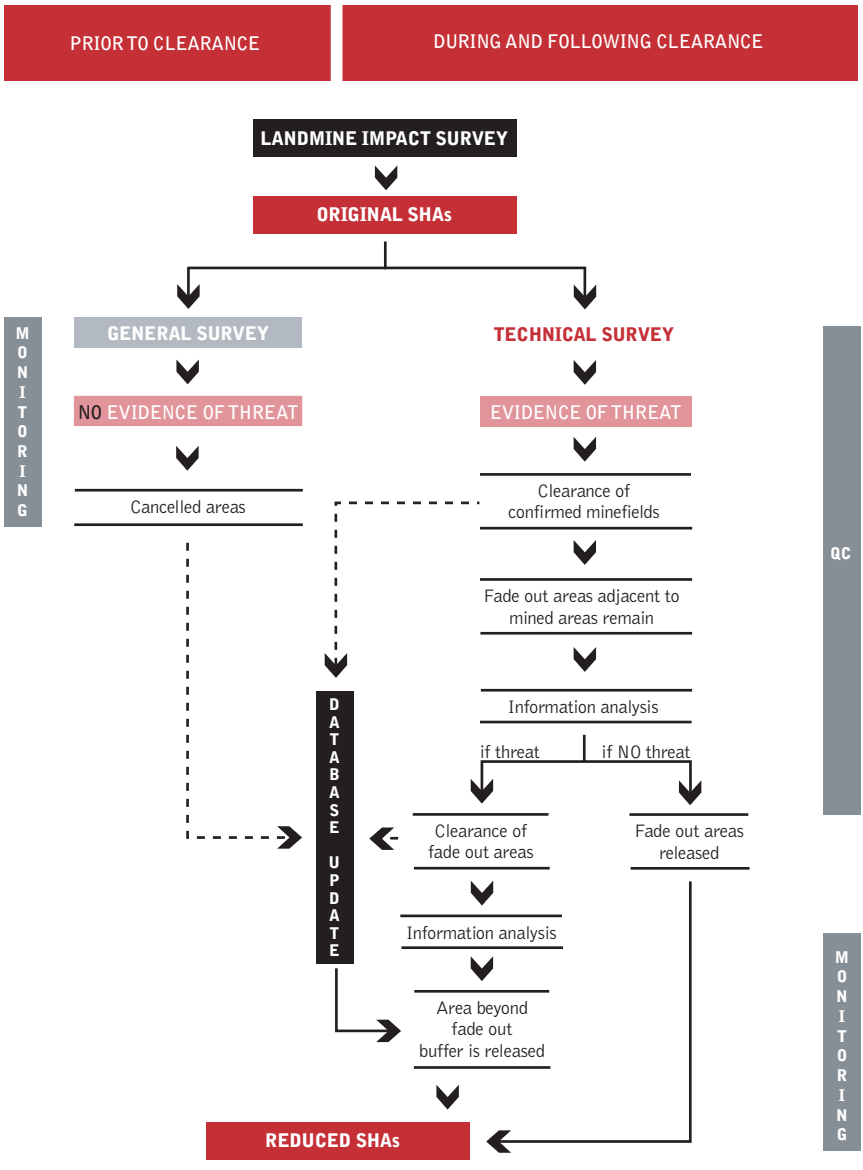


**Table 1** | GDMA criteria for false positive SHA release

| |
|---|
| **Criteria** Land release will depend on<br>1. Intended use of the land;<br>2. Duration since land has first been used by the villagers;<br>3. The availability of any mine and UXO signs, past and present;<br>4. The distance between the area and mine accident(s) in the minefield (if any); and<br>5. The landowner's approval on the safety of the area. |
| **Comments** Details on each criteria may need to be developed to further streamline the process and reduce room for subjective decision-making. In a situation where criteria are well identified but not yet detailed,[1] a balance needs to be maintained between standard operating procedures and situation analysis. To this end procedures should provide as much guidance as possible in terms of defining the point where the land has reasonably fulfilled all the criteria without preventing the team from taking practical decisions adapted to a particular situation. |

Decision-making and document trail to be confirmed, since procedures for decision-making and generating documentation are in the process of being developed.

## 5. ANALYSIS OF THE GDMA SYSTEM

**Concept** The GDMA model is based on two parallel sets of activities, which ultimately result in the release of areas previously categorised as mine "suspected". The release of SHA can either be done prior to clearance using the information collected by the General Survey or during and/or following Technical Survey and the clearance of confirmed minefields. Both courses of action ultimately result in SHA removal from the national database.

The General Survey gathers pertinent information, which allows for the removal of designated land from the large SHA category. This course of action is the less costly and does not require technical input since it heavily relies on the survey technique and the quality of the information gathered.

Technical Survey is carried out whenever land does not fulfil all the criteria for immediate release and when confirmed minefields are identified. This twofold process requires both the clearance of a mined area and its surrounding buffer, locally termed "fade-out areas". Further clearance will also be supported by the analysis of technical information generated from the demining work. According to the GDMA all land located outside these two adjacent areas can be classified as "safe" and is therefore subject to land release. If the Technical Survey team does not detect any signs of mine threat in the fade-out areas then the perimeter immediately adjacent to it can be

considered safe. If evidence of mines is found, the size of the fade-out areas will need to be revised and re-assessed for further SHA subtraction. This technically driven process may be applicable to all types of minefield yet the size of the fade out areas will need to be decided on a case-by-case basis. This process can be summarised as follows:

**SHA - (Confirmed minefields and fade out areas) = releasable land**

However, if the quality of the collected field data permits, the GDMA Technical Survey teams can also take the decision to release the fade out areas immediately attached to the minefield boundaries without using any clearance techniques. In this case the above process can be shortened to the following:

**SHA - (Confirmed minefields) = releasable land (inclusive of fade out area)**

It is essential that the analysis of the information leaves no doubt as to the lack of existence of any mine-related threat outside the fade out area. In case of uncertainty the Field Group Supervisor will be tasked to conduct additional technical verifications and further clearance.[2] Former minefields, fade out areas, as well as released land must all be well documented, mapped and their processes recorded in the standard documents, a copy of which needs to be sent to the GDMA.

**Local participation** Additional information is needed to assess how the system involves both local and national authorities in the entire process. At the community level, both the GDMA and the landowner agree on the safety of the released land and the owner's approval is recorded through the signing of the relevant document. Yet it is not clear whether the different mine action activities require (or allow for) an active participation of the relevant authorities (as political entities with an ownership in the process) especially at the decision-making stage. For clarity, SHA remains under the authority of the GDMA Sulaimaniyah until the land has been cleared **or** a legal agreement for release is agreed between both parties – based on the general survey.

**QC/QA and monitoring** The GDMA is in charge of conducting QA work throughout the entire process using its QA and Sampling Teams to ensure that decision-making on releasing land is well supported. Otherwise further samples will be taken by the Sampling Teams and the responsibility is shared at all levels of the decision-making.

**Liability** Land already reclaimed or used by the communities can be subject to official land release. Similar to the Cambodian system, if the land has already been spontaneously declassified by means of local use, the GDMA's role will then consist in ascertaining that the land fulfils all the same criteria as required by the General Survey. Following a legal agreement between the two parties, the land owner will bear responsibility for the utilisation of the false positive SHA as it will be removed from the database.

## 6. SELECTED BIBLIOGRAPHY

GDMA "Technical Survey Standard Operating Procedures".

## ENDNOTES

[1] See the Croatian case for an exhaustive list of criteria which makes the land release model strictly bound to time and land use.

[2] Soil sample and decision making to be shared with GDMA QA teams.

CHAPTER 9

# LEBANON

# LEBANON

## 1. THE LANDMINES AND ERW PROBLEM: COUNTRY OVERVIEW

| | |
|---|---|
| **AP Mine Ban Convention country status** | Has not yet acceded to the AP Mine Ban Convention. |
| **National set target** | Mine action stakeholders intend to clear all recent cluster munitions by the end of 2007 and remaining minefields by 2011.[1] |
| **Main periods of conflicts** | 1975: start of the civil war until 2000 and end of Israeli occupation.<br>2006: conflict with Israel. |
| **Landmine Impact Survey** | Completed in 2003. |
| **Main affected areas** | South Lebanon (territory formerly occupied by the Israeli forces) and Nabatieh provinces are the most affected, followed by Mount Lebanon. |
| **Size of suspect areas** | Since 1975, an estimated 150 million $m^2$ of land have been affected by mines and UXO. By early 2006, nearly 60 million $m^2$ had been returned to the Lebanese people. An estimated 55% of affected land remains to be cleared.[2] |
| **Mines and UXO estimation** | The Mine Action Coordination Centre in South Lebanon (MACC SL) has estimated more than 1 million unexploded cluster bomblets.[3] |
| **Accident rates** | Between 14 August and 28 September 2006, UXO caused 124 injuries and fatalities.[4] From 14 August 2006 to 30 April 2007, 200 victims recorded in South Lebanon.[5] |
| **National Mine Action Authority** | The Ministry of National Defence acts as the overarching authority. The National Demining Office (NDO) implements mine action through national and international agencies. |
| **Main Operators** | Lebanese Armed Forces, BACTEC, Danish Church Aid, Handicap International, MAG, NPA, SRSA. |
| **Est. timeframe for clearance completion** | According to the Lebanese National Plan for Completion, technical surveys and clearance deployments can achieve the clearance of all high and medium impacted communities within five years.[6] |

**National land classification system**

**High Threat Hazardous Area (HTHA)** | Areas with a confirmed or known presence of a mine or UXO threat.

**Low Threat Hazardous Area (LTHA)** | Any areas of land that are suspected of containing a mine or UXO threat.

**Suspected Hazardous Area** | An area suspected of containing a contamination hazard (and thus in need of further survey and information analysis).

**Cancelled Area** | An area previously recorded as a (suspected) hazardous area, which subsequently is considered, as a result of actions other than clearance, not to represent a risk from mines and UXO.

## 2. LAND RELEASE PROCESS: COUNTRY BACKGROUND

While the whole of Lebanon is affected by mines and UXO, this case study primarily considers operations south of the Litani River, in the area of operations coordinated by the South Lebanon Mine Action Coordination Centre (MACC SL).

MACC SL has developed a formal process for land release aimed at changing the status of formally reported Dangerous Areas (DA) and Suspected Hazardous Areas (SHA), which have been recorded into the Information Management System for Mine Action (IMSMA). This modification of status relies heavily on more accurate and reliable information so as to concentrate limited demining resources in priority locations.

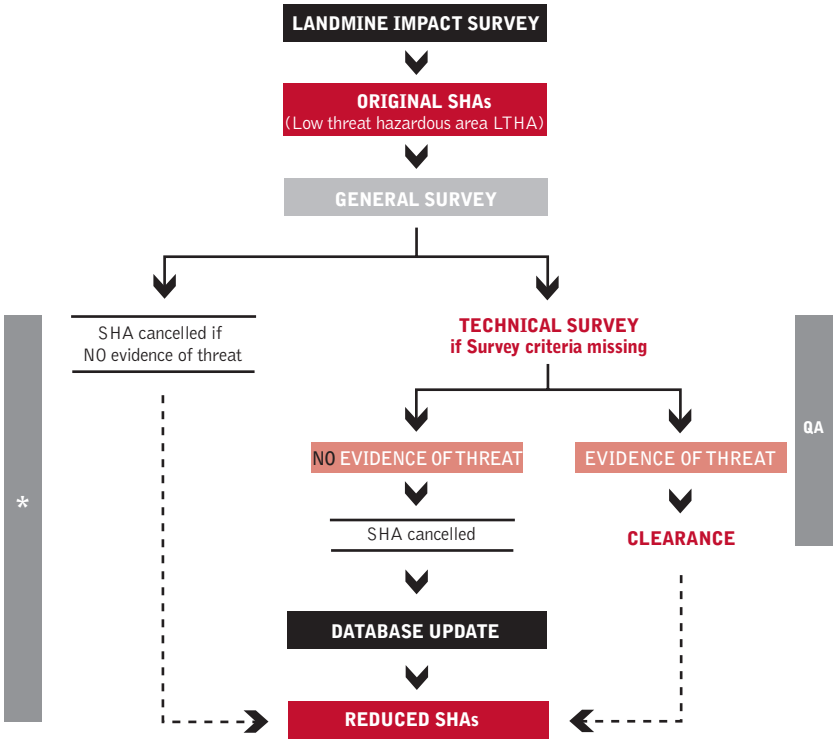
A national "technical" survey process was initiated by the National Demining Office (NDO) and, between May 2005 and May 2006 surveyed 9.8 $km^2$ of suspect areas of which 7.2 $km^2$ were cancelled and released.[7]

## 3. LAND RELEASE PROCESS: OBJECTIVES

The main aim of the Lebanon Land Release process is to return safe land to civil communities as quickly as possible in a methodical and reliable way. The methodology developed was designed to be, and has become, a reliable process for the cancellation of any DA in order to return land to the communities as soon as possible.

## 4. LEBANESE LAND RELEASE PROCESS

**Lebanon |** Process for Land Release




*follow up possible, leading to change of status

# CHAPTER 9

## LEBANON

**Table 1** | Lebanon criteria for false positive SHA release

**Criteria**

1. Was a comprehensive survey completed of the suspected area and its surroundings?
2. Was the landowner located and interviewed?
3. Does the landowner(s) agree with the assessment that the area is mine/UXO free?
4. Is the area being used on a regular basis?
5. Has the area been developed since the DA report was submitted?
6. Are there signs of fighting or military positions located within 200m of the target?
7. Have there been mine/UXO related accidents in the area?
8. Are there indications of mines or UXO located during the Survey?

**Comments** The criteria are simple and straightforward since they do not indicate any specific timeframe or attributes to the suspect land. Some questions may need to be more developed such as "is the area being used on a regular basis", "how often and for what purpose", "has the area been developed since the DA report was submitted" to render the whole process more accurate and consistent.

**Table 2 |** Decision-making and documents trail of the Lebanese SHA cancellation process

| Stage Number | Persons / Bodies Responsible | Activity | Documents Used/Produced |
|---|---|---|---|
| 1 | NDO/MACC SL operations | Issue task dossier to Survey Team | Task Dossier |
| 2 | Survey Team advised by Community Liaison Assistants | Conduct Survey | Survey Questionnaire (SQ) |
| 3 | | **If NO threat evidence** | |
| 4 | Survey Team | Recommends cancellation | Survey Questionnaire |
| 5 | Survey Team (ST) Supervisor | Complete | SQ Cancellation criteria |
| 6 | | **If ALL criteria fulfilled, no need for Technical Survey/clearance. Proceed with cancellation process.** | |
| 7 | CL Assistants and ST Supervisor | Ensure landowners participation | Cancelled Area Report |
| 8 | 2 Landowners | Agree with new land official status (no apparent threat) and sign | English & Arabic versions of Cancelled Area Report |
| 9 | Local Mukhtar | Agree with new land status | |
| 10 | MACC SL UN Plans Officer & LAF representative | Visit the proposed cancelled site and if agree sign | Cancelled Area Report |
| 11 | MACC SL Chief of Operations | Approve | Cancelled Area Report |
| 12 | LAF Regt via NDO | Approve | Cancelled Area Report |
| 13 | NDO IMSMA Department | Approve | Cancelled Area Report |
| 14 | MACC SL Information Department for IMSMA action | Record and file in task dossier | Cancelled Area Report and Task Dossier |

## 5. ANALYSIS OF THE LEBANESE SYSTEM

**Concept** The Lebanese system stems from the assumption that all SHA is a "Low Threat Hazardous Area" (LTHA) until evidence proves otherwise. The process essentially relies on how safe the community feels when using the land that has been released. Released land needs to meet the cancellation criteria of the survey questionnaire and have the community's confidence. In a Low Threat Hazardous Area (LTHA), or SHA where there is NO previous history or evidence of mines and UXO, mechanical flails can be deployed as part of a QA and community confidence building.

The model starts from the lower risk scenario (**SHA = LTHA**) so as to ensure that false positive SHA are limited and confirmed minefields are targeted efficiently. This model has the advantage of preventing over-extrapolation and SHA oversizing. It works by progressive upgrading from presenting the lowest to the highest level of threat as more data is gathered on the status of the land. This system works in the opposite way to the Croatian model which assumes that all SHA has the potential to present the highest level of risk and only the removal of any doubt can trigger land declassification, cancellation and release.

The release of SHA without any known, recorded history or visible evidence of fighting first undergoes a thorough risk assessment, which enables the MACC Operations Teams and the Community Liaison Team to decide whether the land can be cancelled directly or whether it should be subject to Technical Survey. Only those SHA that have been through the formal cancellation process will be removed as a DA from IMSMA. Cancelled areas will still be recorded as "Cancelled" land so that a historical record is kept of all areas released.

If the area fails to fulfil the Cancellation criteria then the area will require Technical Survey to ascertain or disprove any threat. Land release of previously recorded minefields will normally not take place without some form of mine clearance activity, e.g. as part of the Technical Survey implementation. The quality of the field data gathered will then inform whether a cancellation or QA completion process is needed.

If evidence is found of mines or UXO then the area will be upgraded to a "High Threat Hazardous Area" (HTHA) and cleared according to standard clearance methods. "Site Specific" clearance methodology and clearance plans will normally be developed to guarantee the cost-efficiency of the operations.

**Local participation** The Cancellation Process needs to involve and be endorsed by the following parties: MACC SL, the Lebanese Armed Forces Representative, two landowner representatives and local Mukhtar (local authority). All major documents are held in the MACC SL and the NDO although the Land Cancellation form is also held by the Mukhtar and municipality, who are both involved in the walk around process. Once the land has been handed over there is an obligatory follow-up on the cancelled/released land after six months.

Land ownership in Lebanon is either processed through public/municipality records or is assigned by the Mukhtar. In the course of the Cancellation Process the Community Liaison Officer involves both the recorded landowner(s) and the actual land users (who may be different).

Additional information on the landowner (i.e. who identifies the two landowners, and can they be husband and wife?) may be useful and help further streamline the process. It is important to ensure that the final end user is confident and satisfied with the assessment prior to land cancellation. If the recipient still has reservations concerning the safety of the land then a mine clearance asset may be used. Mechanical flails can be deployed as a confidence building tool. In this case the area will be deemed to be a LTHA Category 3 until finding evidence of a threat. In a confirmed minefield the mechanical flails will never be used as a single tool and will always need to be complemented by manual demining or Mine Detection Dogs. Each situation may be re-assessed on a site-by-site basis.

**QC/QA and monitoring** The ongoing QC system ensures that any issues encountered are dealt with on a timely basis in order to limit the disruption of the operations and prevent duplication of efforts. All clearance receives one external QA assessment per week by the MACC SL QA section. This takes place at every site, regardless of how much time has been spent by each clearance asset. In a similar way the Survey Operations team will receive an external QA visit.

The MACC SL Community Liaison Officer is responsible for updating the whole process. There is a mandatory requirement to re-visit each former SHA six months after the land has been cancelled. This routine activity is further monitored by the Post-Clearance Officer who is responsible for any follow-up actions. This means that if cancelled land later appears to pose any risk, the land can be subject to further operations until local confidence is achieved. On the other hand, small projects can also be developed in direct support of the community use of the land.

**Liability issue** The clearance organisation will ask the national authorities, LAF and MACC SL Plans Officer to visit the site and recommend and agree with the proposed cancellation plan. This requires that local landowners and authorities confirm the data and that all concerned parties, including the NDO, reach an official agreement. The reclassification of already "cancelled" land (from "presenting no obvious risk" to "posing threat") is a possibility, clearly mentioned in the Lebanese procedures.

## 6. SELECTED BIBLIOGRAPHY

"Criteria questionnaire for cancelling a recorded dangerous area or minefield" in *Annex T1 to National TSG's Lebanon Edition 2*, June 2004.

"Cancelled area report form".

"MACC SL: General survey, reduced technical survey of recorded dangerous/ suspected hazardous area. Cancelled Area Report" in *Annex T1 to National TSG's Lebanon Edition 2*. June 2004.

"Standard Work Procedure (SWP) 12, Dangerous Area and SHA cancellation process".

ICBL, Landmine Monitor Report 2006.

## ENDNOTES

1 E-Mine online information database.

2 ibid.

3 ibid.

4 ibid.

5 Mine Action Coordination Centre South Lebanon, "April 2007 Monthly Report".

6 ibid.

7 ICBL, Landmine Monitor Report 2006.

CHAPTER 10

# YEMEN

## CHAPTER 10

YEMEN

# 1. THE LANDMINES AND ERW PROBLEM: COUNTRY OVERVIEW

| | |
|---|---|
| **AP Mine Ban Convention country status** | Ratified in 1998. |
| **AP Mine Ban Convention obligation** | Destroy, or ensure the destruction of, all AP mines in mined areas by 1 March 2009. |
| **National set target** | YEMAC's strategic goal is to have zero landmine/ERW victims by 2009 and to create a residual capacity to cope with the remnants of other landmine/ERW problem that will remain after the problem of landmines has been minimised.[1] |
| **Main periods of conflicts** | 1962-1969; 1970-1983 and 1994. |
| **Landmine Impact Survey** | Completed in July 2000. |
| **Main affected areas** | 594 communities affected to various degrees in 19 of 21 governorates mostly in Central and Southern Yemen.[2] |
| **Size of suspect areas** | Estimated at 923 km$^2$ out of the total territory (0.17 per cent). |
| **Mines and UXO estimation** | Between 100,000 and 2 million mines.[3] |
| **Accident rates** | Ten years prior to 2000 ca. 4,904 casualties.<br>2000 – 2004 ca 229 casualties.<br>2005: 35 victims. |
| **National Mine Action Authority** | National Mine Action Committee (NMAC). |
| **Main Operators** | Yemen Executive Mine Action Centre (YEMAC) established in 1998 with seconded military personnel. |
| **Est. timeframe for clearance completion** | Impact free April 2009 and mine free end of 2011. |
| **Start of area reduction and cancellation** | June 2001. |

**National land classification system**

**Suspected Hazardous Area (SHA) |** Land identified by the communities as having mines or ERW. Area first recorded in the database by the LIS in 2000.

**High Threat Area |** Land identified by the community where a mine/ERW accident has happened or where evidence of mine/ERW contamination exists. Area confirmed by Technical Survey Team, marked and mapped as a Minefield.

**Medium Threat Area |** Land identified by the community with no accident or evidence of threat but a probability of being affected by mine/ERW. Area that has been checked and searched by Technical Survey Team using deminers and Mine Detection Dogs (MDD). Area marked and mapped as Reduced area.

**Low Threat Area |** Land identified by the communities as with no obvious risk, which has been used by people and animals in the course of seven years since the end of the conflict and with no evidence of residual mine/ERW. This type of land is rarely searched by MDD during Technical Survey and is recorded as Cancelled area.

**Area Cleared |** "Area Cleared" during survey may include boundary/cross lanes, areas reduced and any other areas that have been physically checked by survey teams. Such areas are to be cleared using one of the approved method survey/clearance methods to the same standard as minefield clearance.

**Safe Area |** "Safe Areas" are portions of land that have not been physically checked but appear not to be contaminated by mines or ERW. Land may be deemed safe, if all of the following apply:

a. The entire area of land is in regular use by locals or others;
b. No accidents or other mine/ERW incidents have been reported or are evident in the area in question; and
c. There is no other information or evidence to indicate the presence of mines, ERW or other explosive devices in the area.

## 2. LAND RELEASE PROCESS: COUNTRY BACKGROUND

The Yemen Executive Mine Action Centre was established in December 1998 and has been operational since 1999 when clearance activities and technical surveys started to be systematically documented and recorded. It is only when the Technical Survey Teams were created in June 2001 that both concepts of "land release" and "risk management" were formally introduced.

The current Technical Survey SOPs,[4] which were developed in the course of 2001 have progressively been updated based on field experience as well as enforced cancellation and area reduction procedures. These procedures have effectively contributed to the wider process of land release in the country.

In July 2000 the Yemen LIS was completed. The survey provided vital information about the landmine and ERW impact on the communities. A total of 923 km$^2$ of land affecting 592 communities was identified as contaminated by landmines and ERW. Of the 592 communities, 14 communities with a population of 36,000 people were found to be highly impacted; the remaining 578 communities (with a population of 791,400) were identified as medium or low impact.

Since the completion of the LIS in 2000 to the end of July 2007, YEMAC has surveyed more than 520 km$^2$ of suspect land. Current data indicates that more than 90 per cent was released without the use of actual clearance. Owing to more accurate and reliable information gathered during Technical Survey operations, many SHA identified during LIS have been released either partially or entirely.

Furthermore, YEMAC has initiated a rapid reassessment of the data gathered by the LIS. In May 2006 the affected governorate of Hadramut was originally reported to have 273 km$^2$ of remaining SHA. To effectively reduce the size of the area, YEMAC established a special Technical Survey Team comprising experienced Technical Surveyors. These surveyors were specifically chosen for their military experience and their in-depth knowledge of the landmine situation within the governorate.[5] The survey team was tasked to conduct a swift assessment of suspect areas by re-using the LIS questionnaire. The survey was completed within three months and concluded that out of the 273 km$^2$ initially recorded, about 23 km$^2$ required more in-depth survey and clearance while 250 km$^2$ were identified as false positive SHA. The overestimated area was then submitted for cancellation, however, its new status will be progressively re-confirmed in the course of follow-up Technical Survey operations.

Following the effective release of suspect land, YEMAC has planned to replicate the approach in other districts and governorates. Although new suspect areas were identified in the course of this exercise, a significant number of SHA were effectively removed from the LIS contamination map.

## 3. LAND RELEASE PROCESS: OBJECTIVES

**Objective I** To reduce the landmine/ERW victim annual rate to nearly zero in all SHA. Since it is unlikely that Yemen can eliminate all ERW accidents that may occur outside of these areas, there is a role for the mine risk education teams to help decrease current and residual ERW casualties occurring outside the SHA category. Most high, medium and low impacted communities will be cleared while the remaining number of low affected areas will be taken care of by the Yemeni Government using government funding and a smaller number of teams.

**Objective II** To clear, fence or mark 310 km$^2$ of SHA that directly threatens the economic and social livelihood of the communities. All the remaining affected communities will need to be monitored so that the level of threat can be reduced.

## 4. YEMENI LAND RELEASE PROCESS

**Yemeni |** Process for Land Release

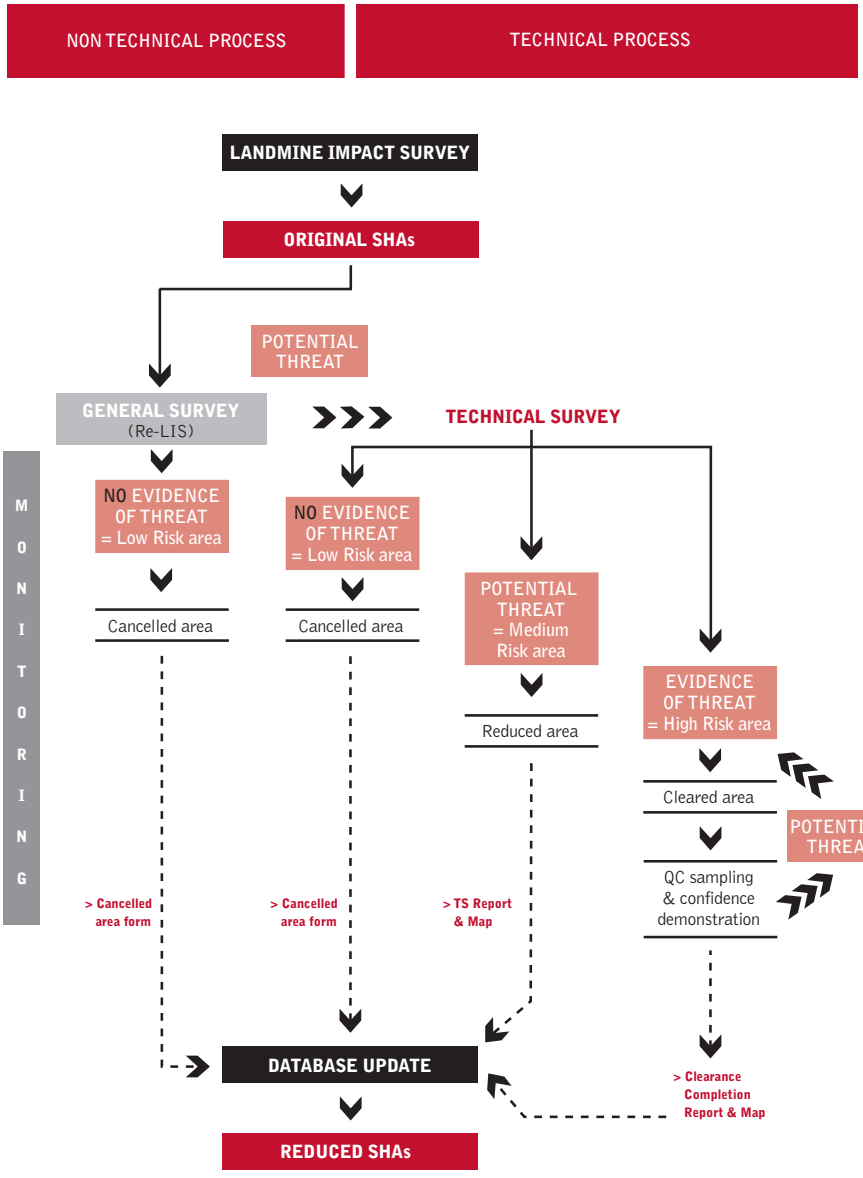


**Table 1** | Yemen criteria for false positive SHA release

**Criteria** Areas are cancelled when land is indicated by the communities as posing no obvious threat because it has been used by people and farm animals in the course of the past seven years (since initial identification by the LIS) and with no evidence of residual mine/ERW.[6]

Only low threat areas are cancelled. Those areas are the ones that have been used by the communities with no evidence of mine and ERW, where no accidents have occurred and where no military positions have been identified. The local perception of risk is a major factor used to assess and agree on the extent that suspect land does not pose any direct threat to the population. The final decision to release land without clearance is only possible if the community leaders officially declare it safe by signing the cancelled area form. Both the signature and official stamp on the form transfers the responsibility of the land to the local community.

**Comments** Similar to the Cambodian and Lebanese cases, no specific criteria for land use and attributed timeframe are required for false positive SHA to be declassified. The seven-year period is the maximum amount of time a piece of suspect land may have been used since conflict ended. Timeframes will then vary depending on how regularly the land has been used by the inhabitants with no incidents. A balance between usage time and confidence on the land will trigger the cancellation and reduction processes. The Yemeni model thus relies heavily on local participation and the community's accepted level of residual risk.

**Table 2** | Decision-making and documents trail for the Yemen process for land release

| Stage Number | Persons / Bodies Responsible | Activity | Documents Used/Produced |
|---|---|---|---|
| 1 | YEMAC Operations Manager | Issue Task Order for Technical Survey (or re-LIS) | Task Order |
| 2 | Technical Survey (TS) Team Community leaders and military personnel | Reassess LIS SHAs | LIS questionnaire and cancelled area form |
| 3 | Technical Survey Team | Gather detailed information | Technical Survey SOPs |
| 4 | TS Team, community Liaison, mine survivors, former military and community leaders | Confirm SHA is used with NO obvious risk = LOW Threat area | Technical Survey SOP |
| 5 | TS Team & community leaders | Cancel SHA completely | Cancelled Area Form |
| 6 | TS Team, community Liaison, mine survivors, former military and community leaders | SHA identified as presenting potential risk = MEDIUM Threat area | LIS questionnaire |
| 7 | TS Team | Reduce SHA by searching with dogs, surveyors and deminers | Technical Survey report and map |
| 8 | TS Team, community Liaison, mine survivors, former military and community leaders | Confirm SHA present risk evidences = HIGH Threat area | Technical Survey report |
| 9 | TS Team | Mark and map minefield for future clearance | Technical Survey report and map |
| 10 | TS Team | Send Survey Report to database | Technical Survey report |
| 11 | TS Team or Clearance Team | Clear minefields | Clearance completion report and map |
| 12 | QC Team | Take samples of reduced and cleared land | QC report |
| 13 | QC Team-YEMAC-NMAC-Local Administration | Handover cleared land | Clearance certificate |
| 14 | Information Manager | Record new information and update SHA polygons | Updated national contamination map |

## 5. ANALYSIS OF THE YEMENI SYSTEM

**Concept** The practice of land cancellation has been spontaneously implemented prior to the official development of a thorough land release concept. Yet it seems that a substantial amount of land has been effectively withdrawn from the general category of SHA in the course of everyday survey work. The Yemeni model uses non-technical means to re-size and reclassify land originally identified as SHA. The General Survey acts as a second LIS (also called "re-survey"), and aims to update current information. Both the new SHA and the SHA originally identified by the LIS will be subject to Technical Survey in which land cancellation, area reduction (using MDD and manual clearance) and definition of minefield boundaries are conducted.

In the course of Technical Survey operations, a SHA is divided into one of three categories of High, Medium or Low threat land. The entire surface of Low threat land may be cancelled in consultation with the community. In the case of partial cancellation, a Technical Survey report will include the actual size of the minefield, the area that has been cleared and reduced, and the area that has been cancelled.

SHA cancellation may be undertaken using both technical and non-technical means. Two distinct yet simultaneous processes of land cancellation are put into effect in the Yemeni system whereby the Technical Survey team perform a non-technical role when cancelling false positive SHA. On one hand, land cancellation is determined by LIS refinement via General Survey and the assessment of local risk perception. On the other, land cancellation, area reduction and land clearance are generated by an approach that may require more than one technical tool. Both approaches contribute equally to the overall process of land release.

**Local participation** The community are involved from the beginning of the land release process, starting with the survey, until the QC team's handover of the land. On its arrival in the community, the technical survey team organises a meeting with the community leaders to re-assess the status of all previously reported SHA. This meeting is organised with the help of a Community Liaison Officer who has been trained by the mine risk education (MRE) team whose task is to investigate and report directly to YEMAC all mine/ERW accidents.

It is usually the case that people have more knowledge now of the local contamination problem than they had in 2000 when the LIS was conducted. Each SHA is discussed separately and the discussion is followed by visual verification. Suspect areas are cancelled once people confirm they have been using the land for many years with no evidence of mines/ERW. In the process of land cancellation, the endorsement of the land cancellation form by the community leader is an essential requirement for hazardous land to shift from "suspect" to "cancelled".

Community elders and former military are usually the people chosen for their knowledge of the local mine/ERW situation. More information is needed about the extent to which a representative sample of the community and/or of local authority actively participate in the various stages of the land release process. As such, the role of the Community Liaison Officer is crucial since they are the one who organises the meeting and selects the people to attend. Although the procedures of the Yemen model underline local participation, it also clarifies whether community members other than the village leaders (a political representative) and former military (technical representative) are actively involved in the entire process. Other relevant participants may include: women, children, newly settled people, who, because of their daily activities and/or social status might be more exposed to risk.

**QC/QA and monitoring:** Area cancellation requiring Technical Survey is subject to monitoring but not QC as no land is actually cleared. However, the land is cross-checked with the community to ensure the information is accurate. Area reduction and clearance following technical survey are followed by both monitoring work and QC to ensure that the operations have met national standards. Similar to the Lebanese model, each mine action asset is subject to scheduled monitoring. Monitoring occurs every six months in order to assess the overall performance of the survey, clearance and related community liaison teams. There are a few cases, however, where a section or part of the land only is searched by Mine Detection Dogs for community confidence building. Otherwise most of these areas are released without actual clearance.

**Liability** With land cancellation, as the community leader has declared the land safe by signing the cancelled area form, the official transfer of responsibility means that the community takes liability should an incident occur. In the case of areas reduced and cleared, the land that has been sampled by a QC team has been tested for safety and handed over. If an accident occurred on land that has either been reduced or cleared, the team involved would be severely penalised.[7] If such cases happened the local victims would be supported as part of the YEMAC's Victim Assistance programme.[8]

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YEMAC Cancellation Report form.

YEMAC Cancelled Area form.

YEMAC Technical Survey SOP.

ICBL, Landmine Monitor Report 2006.

## ENDNOTES

[1] From 1 April 2009, the Government of Yemen has committed itself to using its national human and financial resources to eradicate any remaining mines and ERW.

[2] In late 2004 592 mine and ERW-affected communities were identified – equivalent to 1.55% of all communities in the country. The LIS concluded that 830,000 people lived in them = 3.99% of the total population (20.7 million). Source: E-Mine.

[3] Estimations greatly vary between the US State Department in 1998 (100,000 mines) and the Yemeni Government's estimate of 2 million mines.

[4] SOPs are only available in the Arabic language.

[5] Surveyors with previous involvement in laying mines themselves and/or serving in the designated areas that need releasing were targeted.

[6] The timeframe is calculated on the basis that seven years elapsed between the completion of the LIS and the time this study is being written. In August 2007, the YEMAC Director of Operations as well as other personnel from the Information Management, Planning and Monitoring departments confirmed that this timeframe could actually be shorter.

[7] On one occasion an entire survey team was fired when the QC team found a mine in supposedly cleared land. Source: P. Faiz, personal communication, July 2007.

[8] This programme starts from emergency medical care to long-term medical care and rehabilitation.

## CHAPTER 5 | BOSNIA & HERZEGOVINA

**Suspected Hazardous Areas** Mine suspected areas, previously conflict zones contested by warring factions.

**General Survey** "A process of collecting, processing, and evaluation of data, without applying demining methods and entering the SHA." The concept of GS was developed in BiH from 2000 to 2002. BiH developed the GS as a fundamental process for detailed risk identification at mine suspected locations, thus giving an accurate picture of the situation, which often results in SHA reduction.

**Systematic Survey** An analytical and investigative procedure used to evaluate mine suspected land by collecting, evaluating, analysing and updating data on suspect locations and their characteristics.[1] Systematic Survey identifies suspected area – as the least exact image of mine hazard.

**Technical Survey** Requires physical entry into the risk area, which is categorised as such during General Survey. It consists of detailed search and confirmation of existence of mines, stating the specific details of the ground, defining and marking borders of the mined area as well as setting perimeters for further demining operations.

**Areas Without Obvious Risk (AWOR)** Land not guaranteed as "being free of contamination but that the area in question has been technically treated and shall not be treated again either by the state or a donor unless new facts were provided".

## CHAPTER 6 | CAMBODIA

**Area Reduction** Expression used in the title of the national policy but not well developed or accurately defined in the main body of the text.

**Reclaimed Land** Concept at the core of the area reduction policy in which land originally classified as "mine/UXO suspected" has been returned to productive use by local inhabitants for a minimum duration of three years regardless of the type of land use and with no accidents. In this area reduction concept "reclaimed land" does NOT necessarily mean "cleared land".

## CHAPTER 7 | CROATIA

**General Survey** Planned work by survey teams by which data on mine suspected areas are collected without using demining methods. A general survey execution consists of collecting data on mine suspected areas, data processing, analysis and correlation as well as drawing conclusions on the situation.

**Technical Survey** Represents a set of organisational, operational and safety procedures to define accuracy of information gathered through General Survey, conducting final verification of mine and UXO contamination existence in the particular area and/or building.

**Area Used at One's Own Peril** Surface areas are classified into the category of usage at one's own peril if the user sticks to his personal opinion on non-existence of mine threat and/or that they continue to use surface areas regardless of the estimate of mine threat existence. Surface areas and buildings are required to be classified as such when data is collected by General Survey methods and the analysis procedure establishes *one or more* of the relevant criteria.

**Cancellation of Mine Suspected Area (MSA)** A process aiming to reduce area initially indicated as mine contaminated – *after the Technical Survey and data analysis were conducted.*

## CHAPTER 8 | IRAQ

**Land Release** General process of removing safe areas from the large category of SHA. The expression is invariably used regardless of whether the process requires technical input or not. For both sets of practices the expression "land release" is employed.

**Released Areas** Areas that have originally been identified and recorded by the initial LIS survey team as "dangerous", which have been released subsequent to the clearance of actual minefields and the designated fade-out areas. Released areas are located immediately outside the limits of the fade-out areas.

**Fade-out Areas** Areas identified outside the boundaries of the actual mined area that can only be identified after clearance completion of confirmed minefields. The boundaries of the fade-out areas can be identified using updated and accurate data: identification of their limits will then assist in detecting potential cases of mine migrations from their original location. Fade-out areas are located between the actual minefields and the released areas.

## CHAPTER 9 | LEBANON

**Area Reduction** The process through which the initial area indicated as contaminated (during the GMAA process) is reduced to a smaller area. Area reduction may involve some limited clearance, such as the opening of access routes and the destruction of mines and UXO, which represent an immediate and unacceptable risk, but will mainly be as a consequence of collecting more reliable information on the extent of the hazardous area. Usually it will be appropriate to mark the remaining hazardous area(s) with permanent or temporary marking systems. Area reduction is also sometimes undertaken as part of the clearance operation.

**Cancellation of Reported Dangerous Areas/Minefields** An area previously recorded as a hazardous area or SHA, which subsequently is considered, as a result of actions other than clearance, not to represent a risk from mines and UXO.

**Cancelled Area** A cancelled area is an area previously recorded as a hazardous area, which subsequently is considered, as a result of actions other than clearance, not to pose a risk from mines and UXO.

**Suspected Hazardous Areas (SHA)** An area of land that is only "suspected" of containing a threat. These are normally areas that the community or landowner is not happy to use. This is normally because these people have not been in the area during the conflict and have moved back into the area post-conflict. Also, due to a lack of factual or reliable evidence from people who lived in the area during the conflict, the landowner may be afraid to move over the area, i.e. he/she assumes every area is dangerous.[2]

## CHAPTER 10 | YEMEN

**Area Reduced** Area that is physically checked either by the surveyors or the Mine Detection Dog (MDD) teams in the course of the Technical Survey. Area reduced is subject to marking, recording and mapping. It is also subject to QC (through sampling) by the QA team before handover to the community. The clearance team is held responsible for any accidents occurring after clearance.

**Area Reduction** Any area that has been physically checked by the surveyors, deminers or the MDD teams during the technical survey.

**Cancelled Area** Areas that have been used by the community and thereafter *declared safe or to have no mines*.

# ANNEX A

## ENDNOTES

[1] The procedure of Systematic Survey (SS) consists of four main phases: (1) Planning and preparation of SS; (2) Collecting information; (3) processing information on suspected areas and (4) re-assessment of SS results. The results of SS are the identification of suspected areas; each of which has certain characteristics (geo position, borders, area size, possible use and priority). Lisica.

[2] This is a normal occurrence in South Lebanon especially in formerly occupied areas. Therefore the terminology "SHA" was developed.

## CROMAC CRITERIA FOR IDENTIFICATION OF SURFACE AREA STATUS BY GENERAL SURVEY

These criteria define mine and UXO contamination or non-contamination of areas in the Republic of Croatia. They define mine-suspected areas and categorise surface areas inside the mine suspected area (MSA) (the Croatian equivalent of SHA). Distribution of criteria for identification of surface area status:

- Criteria for inclusion of surface areas and buildings to MSA/SHA;
- Criteria for cancellation of surface areas and buildings out of the MSA; and
- Criteria for determination of MSA/SHA categories according to the method of demining.

### 1. AGRICULTURAL AREAS

**a.** Arable land and gardens cultivated by ploughing over and/or digging down to the depth of 20 cm or deeper for longer than a period of two years.

**b.** Grassy orchards maintained by regular mowing and/or grazing and bringing in the fruits longer than a period of four years.

**c.** Vineyards (and vineyard plantations) cultivated by ploughing and/or digging down to the depth of 20 cm and deeper for longer than a period of two years.

**d.** Grassy vineyards maintained by regular mowing for longer than a period of four years.

### 2. MEADOWS AND PASTURES

**a.** Meadows mowed on a regular basis low to the ground, mowed grass or hay being collected and removed from the surface area (by driving away or burning off), for longer than a period of four years.

**b.** Meadows (and pastures) partially mowed, mowed grass or hay being collected and removed from the surface area (by driving away or burning off), meadows for cattle grazing on their entire area as well as movement of shepherds and other population, for longer than a period of five years.

**c.** Pastures and other areas intended exclusively for cattle grazing (meadow pastures, underbrush and rocky ground, neglected agricultural-arable surface areas), cattle grazing is continuous on the entire surface area, shepherds and other population move around surface area, for longer than a period of five years.

## CROMAC CRITERIA FOR IDENTIFICATION OF SURFACE AREA STATUS BY GENERAL SURVEY

### 3. FORESTS

**a.** Forests, forest earthen paths with broadenings (turnarounds) and fire lines used for cutting and hauling out timber and firewood, maintenance of fire lines and fire protection roads, activities of forest workers, hunters, mountaineers, forest (wild) fruit pickers and other beneficiaries move around surface area, for longer than a period of seven years.

**b.** Forest paths with hard base (macadam) used on a regular basis (not only roadways) during transport of timber mass, maintained by levelling, etc., along its entire surface area that is at least 3m wide, *for longer than a period of four years.*

### 4. RIVERS, other water surface areas with riverbank zones and embankments

Used and maintained on a regular basis (cattle watering, exploitation of gravel, movement of fishermen, hunters, bathers, excursionists and local population), *for longer than a period of five years.*

### 5. HOUSES and farm buildings with house yards

**a.** Houses, other housing facilities and farm buildings with yards used for housing and maintained for longer than a period of three years.

**b.** Newly-built houses, other housing facilities and farm buildings with surrounding space used during preparation for construction, during construction and maintained after construction for longer than a period of one year.

### 6. ROADS and non-categorized local roads

At least three or more metres wide used on a regular basis not only along the roadway but along the entire surface area as access roads to agricultural lots, pastures, forests, rivers and other water surface areas and other surface areas and buildings with fulfilled criteria for cancellation out of the MSA/SHA.

Specific characteristics which should be a subject of the analysis and decision making about early cancellation of surface areas and buildings out of the MSA/SHA, according to the prescribed utilisation criteria, are related to the frequency and ways of utilising surface areas. For example: cultivated land and gardens used for ploughing on several occasions during the year (e.g. areas with Mediterranean climate).

## LEBANON CRITERIA FOR LAND RELEASE

# CRITERIA QUESTIONNAIRE FOR CANCELLING A RECORDED DANGEROUS AREA OR MINEFIELD

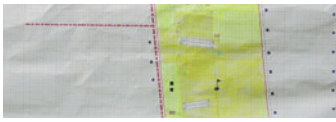
**MF / DA / SHA Number** _____

1. The following criteria must be met for a Recorded Dangerous Area or Minefield to be "CANCELLED"

| SER | Question | YES or Agreed | No or Disagree | Remarks |
|---|---|---|---|---|
| 1 | Was a comprehensive Survey completed of the suspected area and its surroundings? | | | MACC SL CLO Team must be involved with initial community liaison meetings. |
| 2 | Was the Landowner located and interviewed? | | | Two (2) local contact persons who know the area must be interviewed. |
| 3 | Does the Landowner(s) agree with the assessment that the area is Mine/UXO free? | | | Landowner plus one other must sign the CANCELLED Area Report form in English and Arabic. |
| 4 | Is the area being used on a regular basis? | | | |
| 5 | Has the area been developed since the DA report was submitted? | | | |
| 6 | No signs of fighting or military positions are located within 200m of the target UTM? | | | |
| 7 | There have been no mine/UXO related accidents in the area? | | | If Yes, then details must be provided, with casualty interview if possible. |
| 8 | No indications of mines or UXO were located during the Survey? | | | |

2. If "YES/AGREED" is indicated for all serials then the area will meet the criteria to be "CANCELLED" and you are to complete the Cancelled Area Report and proceed as per the Cancellation Procedures flowchart. If NO is indicated for serials 4 & 5 then reasons why must be indicated, but the area may still be cancelled.
3. If "NO/DISAGREED" is indicated for serials 1,2,3,7 & 8 then the area will not be accepted for cancellation and further Level 2/Technical Survey will be conducted.
4. If "NO/DISAGREED" is indicated for serials 4, 5 or 6 then the area may meet the cancellation criteria but annotate in Remarks why NO/DISAGREED is marked.

| **Form completed by** | | **Approved by** | |
|---|---|---|---|
| Name | _____ | Name | _____ |
| Signature | _____ | Signature | _____ |
| Appointment | _____ | Appointment | _____ |
| Date | _____ | Date | _____ |

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