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EDITOR'S LETTER

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## Survey and Land Release: Lessons from Recent Country Experience

by Charles Downs [ Downs Consulting ]

*Suspected Hazardous Areas bring fear to local communities and hinder socioeconomic development, but in most cases the majority of the land contains no mines at all. Survey for land release may put an end to this fear, and it allows for an accelerated solution to the landmine problem.*

Mines kill; clearing mines saves lives. With the dramatic fall in the number of new victims in most mine-affected countries, however, the primary justification for mine action today is to support development. Suspicion that land is mined interferes with community and national economic development, poverty reduction, reestablishment of communities, and private-sector investment. Suspected Hazardous Areas reflect community fear. Land release supports development by eliminating this fear.

### Unnecessary Practices

The total area suspected of being mined is too large for the resources available for clearance throughout the world. The process of fully clearing all such areas is slow and expensive, and it requires many decades to complete. Most suspect land has no mines; in my experience, less than 5 percent of SHAs prove to have any mines in most countries, and many clearance operations find none at all. Two-thirds of the clearance tasks concluded by Handicap International–Mozambique in 2008 found no mines/explosive remnants of war.

Landmine-hazard information is essential for planning by community and development operators—if their project crosses through a suspected-mined area, they want it cleared. For government ministries and nongovernmental organizations, this may include specific plots of land where they plan to build a school, market or road. For private investors, this may include land to provide access to or expand factories, commercial farms, natural-resource mines or oil fields. A poor farmer may decide to accept the risk directly. A commercial contractor may not be able to obtain insurance for its work until the land is certified safe. In such situations, a land-release approach will provide a more rapid response to development-operator needs, while requiring fewer resources and leaving more resources for other tasks. For example, a majority of Mines Advisory Group–Cambodia tasks support international NGO community-development projects. The NGOs want to be certain that there are no mines in their project sites, and they insist on

clearing the land. While their desire for "peace of mind" clearance is understandable, it results in poor use of resources. In 2007, in the absence of a nationally accepted land-release approach, over 50 percent of MAG's clearance tasks produced no mines.



Extensive Technical Survey for resettlement of internally displaced persons, Zobjug, Azerbaijan, released after mechanical preparation and visual inspection.

*Photo courtesy of ANAMA*

Until recently, it was customary for Norwegian People's Aid–Angola to clear 100 percent of any area identified as suspected of containing landmines. This policy resulted in the clearance of many areas without mines and a low ratio of mines found to hectares cleared. Since early 2008, NPA (with the support of the Geneva International Centre for Humanitarian Demining) has been developing a land-release approach to Technical Survey in Angola.

According to a concept paper by NPA–Angola, "In the past, no risk-management assessment was ever made to evaluate this risk, and the alternative option chosen was to manually clear ever-increasing areas of land, almost always without finding any mines. This 'safe' option was in fact a wasteful use of mine-clearance resources. These resources, which are often scarce, should be used to the benefit of the local people with actual landmine problems. Land-release concepts similar to the model used by NPA will ensure an efficient clearance of minefields and a higher percentage of land returned safely to society."<sup>1</sup>

Landmine Impact Survey Land release does not save lives directly, since the land released generally had no evidence of mines in the first place. Clearing land without mines is an expensive way to enable development and is a poor use of resources. It is reasonable to clear all mines, to release all areas that are not mined, and to investigate further those areas that are doubtful in order to determine which areas have evidence of mines and which areas do not, and to clear or release them accordingly. The land-release approach is a significant change to both the strategic and operational roles of mine action. It centers on the collection and use of improved information to more effectively apply demining assets and return more land to safe use at a quicker rate.

The mine-action database, often based on a national Landmine Impact Survey, contains the best information available at the time it was collected. The LIS is, however, based primarily on local suspicion about potential hazards on land not in use. It indicates the extent of the problem, the area affected, the number of victims, the number of communities and people affected by landmines, and the socioeconomic activities blocked. How can it be that well-documented SHAs turn out to contain no mines or ERW, and the vast majority of area cleared has no mines at all?

The strength of the LIS is the focus on the impact of landmines on communities, but it tends to provide large and imprecise estimates of SHAs. These surveys were always conducted with the expectation of technical follow-up for operational planning. On the other hand, there is substantial evidence that the local population does not use some parcels because they suspect that mines may be present, even though the site proves to contain no hazards. In the absence of complete information, surveyors frequently respond to community concerns and uncertainty by identifying SHAs where the community fears them to be, even though more complete information might indicate there was no hazard. At the same time, there is substantial empirical evidence that local populations make use of land previously recorded as hazardous. In some cases this may be in spite of the hazards, while in other cases it may reflect local knowledge that the specific parcel does not contain hazards. The Information Management System for Mine Action created certain distortions in the data; for example, repeat identification of the same SHA due to its influence on more than one community may appear as "pancakes" on IMSMA-produced maps.

When the LIS is conducted by teams trained and equipped to produce more precise SHAs, the results are dramatically better. For example, during the Angola LIS, one of the six implementing partners included precise polygon figures as a task of the survey teams. As a result, the average size of SHAs produced in their area of operation was only one-ninth the average size for all other implementing partners combined. Adding this task to the survey teams required slightly more time in each mine-affected community but did not measurably increase the calendar time required for the survey fieldwork as a whole.

### **Better Information**

It is important to periodically resurvey and continually update the national database with improved local information. Information improves with follow-up surveys for one or more reasons, including the following: more sources will be

available to provide more complete information and more accurate descriptions; local populations will have learned more about their situation; local populations will have been using parts of the SHA and in the process, encountered or not encountered evidence of mines; local populations and/or clearance operators may have conducted clearance in the area; and General Survey teams may be trained and equipped to more precisely estimate the boundaries of the SHA.

For example:

- In Bosnia and Herzegovina, the original estimate of contaminated area made in 1996 of 4,200 square kilometers (1,622 square miles) has been repeatedly revised downward to reflect improved information and clearance. The beginning 2008 estimate was 1,755 square kilometers (678 square miles), with only about 100 square kilometers (39 square miles) expected to require full clearance.
- In Cambodia, MAG and The HALO Trust identified nearly 800 square kilometers (309 square miles) of LIS-suspect land reclaimed for use by villagers, while the Cambodian Mine Action Centre determined that, in the high-casualty districts which it resurveyed, 76 percent of the LIS SHAs were no longer suspect, although another 46 percent not originally included in the LIS should be added.
- In Azerbaijan, based on systematic review on the ground with district administrators, the Azerbaijan National Agency for Mine Action reduced the total SHA to 306 square kilometers (118 square miles) from 746 square kilometers (288 square miles) in the LIS, with the further estimate that only 29 square kilometers (11 square miles) will require full clearance.
- Ethiopia provides the most dramatic example of change: resurvey of 1,018 communities in 2008 (two-thirds of the 1,492 affected communities identified by the Ethiopian Landmine Impact Survey) confirmed 892 communities as mine-free, including 28 with mine problems eliminated by spot-clearance activities of the survey teams, and cancelled over 95 percent of the SHA.



This Jangamo, Mozambique SHA was not cultivated for many years until it was released through Non-technical Survey.

*Photo courtesy of the author*

How is this last example possible? Was Ethiopia's LIS severely flawed? Is it simply that the local population understood how to play the aid community and provided answers that were most likely to obtain more resources? The Ethiopian Mine Action Office staff involved in the resurvey process found that in nearly all cases, the community had a clear and reasonable basis for their suspicion. Common reasons for suspicion included past or current location of military positions or trenches and knowledge of past mine incidents. However, in the vast majority of cases, the survey team determined the suspicion did not reflect the current presence of mines/ERW. While there is no indication that this degree of misapprehension is widespread, it is likely that there are similar misjudgments in other countries that have recorded communities as mine-affected based on community suspicion. Quality information about landmine hazards is essential for quality mine action. First, overall information provides an overview of the national problem and is the basis for determining broad priorities, national strategy, multi-year plans and resource requirements. Second, improved information enables a national program to refine an imprecise SHA and thus more accurately delimit a

demining task area. In so doing, it may release large amounts of land listed as suspect in the national database but sometimes used by the local population. This data also supports local planning efforts for land use, economic development and investment, as well as for mine-action priority-setting among SHAs. Third, further information gained within the task area may enable the clearance operator to reduce it to a smaller area for full clearance. This supports task planning and improved focus of demining assets on specific square meters of land containing mines. The mean number of mines found per hectare of cleared land in the countries reviewed more than doubled since the introduction of Technical Survey.<sup>2</sup> As a rule, the General Survey cancels significant areas from the database, making it available for investment planning, and prepares specific requirements for Technical Survey. Both Technical Survey and clearance release land to end users and remove it from the database.

### Technical Survey for Land Release

While the specific General Survey criteria applied in each country are based on national experience, individual countries tend to incorporate many of the same criteria: local use of the land in a way that would have encountered mines if they were present; indications of past military activity in the area—including military installations and evidence of the presence of mines—and community conviction that the area is free of or affected by mines. High-

quality standards, standard operating procedures and professional judgment must be exercised to determine whether the information collected is sufficient to warrant the release of a given area. Examples of criteria considered by different programs include:

- Locals have used the land in question for farming, cattle grazing or other agricultural activities for a specified period (e.g., three seasons) without evidence of mines
- Land in question has been plowed completely to a specific depth at least three times
- There have been no mine/ERW incidents reported for at least a specified period of time
- No emplanting of mines was reported or observed
- There are no military installations nearby
- There were no military confrontations in this area
- No evidence of mines or ERW has been found
- Survey team checked high-suspicion spots and found no evidence of mines
- Locals are confident that the area contains no threat

Several countries have concluded that it is beneficial to include qualified demining/explosive-ordnance-disposal staff on the General Survey teams in order to verify information and to resolve small tasks. The Bosnia-Herzegovina Mine Action Center uses deminers on General Survey teams to check the spots where incidents have been reported. The Ethiopian Mine Action Office found that experienced deminers were an essential component to enabling General Survey teams to disconfirm many entire SHAs, and to resolve about one-sixth of valid SHAs caused by small-area contamination.

The purpose of Technical Survey for land release is to provide confidence that a specific area contains or does not contain mines. It starts from the assumption based on experience that a specific SHA probably contains no mines and that the way to negate that hypothesis is to adequately test the land to find evidence of mines. Assets are applied according to nationally accepted standards and standard operating procedures for "all reasonable efforts" to identify areas with evidence of mines.<sup>3</sup> These SOPs are "lighter" than for clearance, and typically include mechanical preparation of the full site, or lanes provided by machines or mine-detecting-dog teams, with extensive visual inspection or checking by a single dog. If the suspicion is confirmed, the area is subjected to full clearance, building on relevant actions already taken during the Technical Survey. In practice, if there is a reason to believe that the area and number of mines are small, the Technical Survey operator will often clear the hazardous area within the framework of the Technical Survey. If no evidence is found, the specific subsection may be released as an area without evidence of risk. To the extent that this is practical, the amount of clearance and cost will be lower than with full clearance of the entire task site. In Azerbaijan, the Azerbaijan National Agency for Mine Action has found that the cost per square meter of releasing land through Technical Survey is about one-third the cost of traditional clearance.

### Standards for Land Clearance and Release

In Ethiopia, areas within the polygon produced by Non-technical Survey are identified as *risk* and *low-risk* areas. Risk areas are understood to be minefields that require clearance. Low-risk areas are ones without sufficient information to classify as risk areas or to rule out such areas. Sampling and other verification methods are applied to low-risk areas to determine whether they contain mines or can be released. Since the purpose is to find any evidence of mines, the most likely locations are all checked (e.g., paths, water sources, clumps of trees), while other areas may be sampled. In principle, 100 percent of the designated area will be treated in this way and released as an "area without evidence of risk" unless specific evidence of mines is found. When evidence is found, nationally accepted SOPs are applied to determine the extent of area to be cleared, often only a small portion of the initial task area.

Developing national standards and SOPs for Technical Survey involves the application of professional judgment gained through years of experience in the national program. Experienced staff in each of the programs affirmed that their programs could advance more rapidly without sacrificing safety if they were allowed to adjust the interpretation of standards based on acquired experience. Some of the options included: partial ground preparation with increased use of visual search, single-dog searches, coverage of sites by flails or brush cutters, faster detector sweeps and less sweep overlap.

Some programs adjust the extent of "light" methodologies according to the degree of confidence in the suspicion that an area contains mines. NPA-Angola established a six-step scale extending from "certain there are mines" to "certain there are no mines," with intermediate steps reflecting weak and strong suspicion (but not certainty) that there are or are not mines in a given area. If there is certainty of mines, the land is cleared; conversely, if there is certainty of no mines, the land is released. If there is strong suspicion that there are mines, a higher percentage of the area will be sampled and verified in order to find any evidence of mines; conversely, if there is strong suspicion that

there are no mines, a lower percentage of the area will be searched or verified to find any evidence of mines. Finding (or failing to find) evidence of mines would result in certainty that there are (or are not) mines, and the corresponding action (clearance or release) would occur. The specific level of sampling and verification may be guided by international experience, but should be determined based on national experience. NPA-Angola distinguishes specific percentages of coverage for different demining assets when used for land-release Technical Survey, according to program experience regarding the reliability of each asset in finding evidence of mines.

### Improved Mine-action and National Standards

- With increased release of land without full clearance through Non-technical and Technical Survey methods, there is a need for appropriate documentation (not a clearance certificate) that declares the land to be an "area without evidence of risk." This documentation may be a legal requirement for many development organizations. It is not a statement that the area is mine-free, because it has not been cleared; it is a statement that a reasonable effort was made to find mines and no evidence of mines exists. Land release does not simply lower the priority of an area to leave it for later treatment. Land that has been determined to be an area without evidence of risk can be used with confidence and should not be subject to further clearance efforts unless the situation changes.
- The objective of mine-action programs should be to ensure that all land achieves an "end state" as an area without evidence of risk, based on the application of "all reasonable efforts" to all SHAs throughout the country. Even so, isolated mines/ERW and possibly entire previously unknown minefields may appear over time, and there will be a need for an institutional capacity to respond to such cases. This response could be through a contracted specialist entity, through civil protection or the military, or it could be a residual capacity of the current national operators.
- An essential component of that residual capacity is the continuing existence of the national mine-action database with the record of all past SHAs, all clearance and other land-release actions. When future changes in land use are proposed that could increase risk (e.g., excavation for urban construction), if appropriate, information can be checked and the site verified and cleared, much like if there were geological, environmental or other land-use issues. This applies whether the land has been cleared or released based on new information.

Although situations may have changed significantly since the LIS was conducted, the LIS report is in most cases the internationally accepted baseline regarding the landmine problem of each country, and it should be updated regularly to reflect both operational progress and improved information. In addition to traditional indicators of efficiency of clearance teams, programs should report on the effectiveness of land release, together with indicators of overall program effectiveness in reducing the landmine problem. Such indicators might include:

- Number of LIS-identified high-, medium- and low-impacted communities free of SHAs
- Total area or percentage of released land in use
- Amount and percent of suspect area released (seek high<sup>4</sup>)
- Number of mines found per hectare of task polygon (seek high)
- Number of mine-clearance tasks without mines (seek low<sup>5</sup>)

Community/end-user information is essential to determine when the mine-clearance effort is finished. The work of the mine-action program is not complete if end-users are not using land that has been released because they are not confident that it is safe. An excellent example of how to ensure that land has been effectively released from mines and suspicion is provided by the 2004-07 HALO Trust-Mozambique mine-impact-free districts project. Convinced that clearance of all mined areas in the four northern provinces of Mozambique was nearly concluded, HALO undertook a systematic resurvey of all communities in those provinces to determine whether there were any remaining mined areas affecting the communities, to clear any that might be identified and to obtain written acceptance from the community and local authorities that their areas were now mine-impact-free. In the process, HALO identified 74 previously unknown SHAs and cleared an additional 176 mines, which represents an additional 16 percent of SHAs (two-thirds of which proved to contain no mines) and a 0.2-percent increase in total mines cleared in the four provinces. Communities previously not comfortable using the land were prepared to use it once their suspicions had been removed by these actions. This situation is a good example of the need to remove community suspicion of mines as part of the professional completion of mine action. Most programs have paid only very limited attention to this issue. However, as programs near completion at the national and local level, it is important to document this progress with the community, donors and other stakeholders.

In order to take full advantage of Technical Survey and land-release approaches, there is a need for a national strategy on the subject, national standards and SOPs to implement it and supportive IMAS.<sup>6</sup> Similarly, the type of

quality assurance appropriate to Technical Survey needs to be determined—ground sampling is still appropriate for clearance, but not as relevant to survey as information-gathering. National standards and quality-assurance procedures should be adapted to permit careful development, testing and wider use of land-release procedures to increase the effectiveness of mine action. The Survey Action Center is currently working with the National Demining Institute to make the land release in Mozambique operational.

## Conclusion

Effective implementation of the land-release approach will accelerate solutions to the landmine problem through improved information-gathering. Experience has shown that large areas and numbers of SHAs can be released from suspicion by teams combining General and Technical Survey skills, resulting in more effective use of clearance assets by ensuring they are concentrated as much as possible on areas likely to have mines. Land release is a better way to ensure that more communities and development projects benefit sooner from a solution to the landmine problem.

*This article draws on research the author conducted for the GICHD ("Survey and Land Release"), and the Survey Action Center ("Mine Action Program Use of LIS Information Several Years after Survey Completion" and "Use of Minefield Information by Development Operators"). The opinions expressed are those of the author, and do not necessarily reflect those of the GICHD, SAC or of individual programs cited (Angola, Azerbaijan, Bosnia and Herzegovina, Cambodia, Ethiopia, and Mozambique).*

## Biography



**Charles Downs** is a mine-action consultant. He has worked in international development for over 30 years and was Chief of the Mine Action Unit of the United Nations Office for Project Services from 1999–2004. He has been part of the Geneva International Centre for Humanitarian Demining and SAC efforts to encourage national governments to integrate land release in their survey and clearance efforts, and has assisted the United Nations Development Programme–Colombia in development of its mine-action strategy. Downs is also a Professor of International Project Management at New York University's Wagner School.

## Endnotes

1. NPA–Angola, "Land Release Concept Paper," internal document, 2008: 9.
2. The mean number of mines found per hectare treated by Technical Survey or clearance, however, has fluctuated more widely, and in one case it was actually lower in 2005 and 2007 than it had been prior to the introduction of Technical Survey. This suggests that while Technical Survey has improved the narrowing of limits on the actual mined areas cleared, General Survey may have become less effective and now includes larger areas for Technical Survey than it left previously for clearance. <http://www.npaid.org/>. Accessed 8 July 2009.
3. GICHD Publication No. 64: A Guide to Land Release: Non-technical Methods. Geneva International Centre for Humanitarian Demining, Geneva, Switzerland (November 2008). <http://www.gichd.org/en/gichd-publications/land-release/?0=>. Accessed 8 July 2009.
4. A higher concentration of mines reflects improved targeting of clearance assets.
5. Fewer tasks without finding any mines reflects improved release of non-mined areas and better targeting of clearance of mined areas.
6. International Mine Action Standards. United Nations Mine Action Service. <http://www.mineactionstandards.org/imas.htm>. Accessed 8 July 2009.

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2. BHMAL (2004), "Standard Operating Procedures"
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