Paved With Good Intentions: The Realities of “Safe” Versus “Free”

Roger West
Golden West Humanitarian Foundation

Follow this and additional works at: https://commons.lib.jmu.edu/cisr-journal

Part of the Other Public Affairs, Public Policy and Public Administration Commons, and the Peace and Conflict Studies Commons

Recommended Citation
Available at: https://commons.lib.jmu.edu/cisr-journal/vol15/iss2/4

This Article is brought to you for free and open access by the Center for International Stabilization and Recovery at JMU Scholarly Commons. It has been accepted for inclusion in Journal of Conventional Weapons Destruction by an authorized editor of JMU Scholarly Commons. For more information, please contact dc_admin@jmu.edu.
Paved with Good Intentions:
The Realities of “Safe” Versus “Free”

Government-initiated landmine and unexploded-ordnance clearance policies often dictate unrealistic standards and goals that differ from the practical reality of landmine/UXO removal. The author argues that end use of the land, as well as the variables of munitions deterioration due to aging and environment, and the level of expected risk should be considered in landmine/UXO policy-making.

by Roger Hess | Golden West Humanitarian Foundation

From a global perspective you will find that much of Western Europe has not reached the same standards expected of those countries that have experienced wars in the last 20 years, such as Afghanistan, Angola, Bosnia and Herzegovina, Cambodia, Croatia, and Iraq. Explosive ordnance, chemical munitions and other hazardous remnants from World War I and World War II are still commonly found during construction and rebuilding in Belgium, France, Germany, Italy and the United Kingdom. Many of these items remain very active and highly dangerous, but the risk level is anticipated, managed and dealt with accordingly. For countries recovering from more recent conflicts, the significant difference is in the way the threat is managed and addressed and how clearance standards are set.

So with this in mind, why are newer post-war environments held to standards that have not been achieved in some of the most developed countries in the world? Let us consider a more realistic approach to clearance standards involving risk mitigation.

Policies versus Practicality

Compared to how we went about our tasks 13 years ago, the landmine and UXO clearance field has matured a great deal. Unfortunately, the same cannot always be said for the policies governing some landmine/UXO clearance efforts. Like many in our field, I have often been placed in situations where I was expected to meet unrealistic standards and goals because policy requirements were at odds with the level of threat. Using an example later in this article, I will explain how this situation occurred while we were working in Quang Tri province in Vietnam. In situations where policies and threat level are at odds, it is challenging to explain why unrealistic standards and goals are, in fact, a waste of time, money and resources.

I have encountered a few common unrealistic standards over the years, including: “The country must be made landmine/UXO free” and to a lesser extent, “The entire estate must be cleared of landmine/UXO to a depth of five, 10 or even 15 meters (16–49 feet).” Such unrealistic expectations have resulted in some of the most debated topics of our profession and have normally been generated from a policy established at the governmental or geopolitical levels. These policies are generally written on principles that may have seemed logical at their inception but are not always reviewed for practicality as time goes on.

Senior politicians developed and/or put in place some of these policies, thereby making the nation as a whole bound to implement them. While a few countries, such as Costa Rica and Macedonia, were fortunate enough to have conditions where landmine/UXO-free status was achievable, for most countries this is nearly impossible.

Landmine/UXO contamination that presents a direct threat to the public or impedes development must be cleared; this is without question. Not everyone agrees, however, that land that does not directly threaten the public or immediately stop development does not require clearance (See Tamar Galbick’s editorial on page 9). There are far more cost- and time-effective methods to manage the risk in these areas without compromising safety.

Without delving into the different techniques involved with clearing each type of threat, the key issue is freedom of movement. Clearing shallow-laid landmines to create free access over a contaminated area results in very little freedom of movement, because a missed signal can kill or seriously injure the operator or his/her team members, as well as anyone who subsequently uses the land. Clearing buried UXO allows far more freedom of movement but requires a search method that goes much deeper. A missed signal is unlikely to kill the clearance team, however, the people occupying and developing the land afterward may not be so lucky. Either way, it should be acknowledged that the threat from an explosive-filled munition—a landmine, cluster munition, hand grenade, mortar, etc.—is still an explosive threat. Wars happen, and since the invention of the cannon ball, hazardous items remain. After the war ends, rebuilding must occur, and the remaining hazards must be managed.

Assessing and Managing the Risk

In Europe, a significant amount of buried munitions remain. In the case of the U.K., more deeply buried munitions are likely larger aircraft bombs dropped by the Luftwaffe. In much of the rest of Western Europe, smaller munitions such as landmines, artillery, mortars, grenades, cluster munitions and other aircraft bombs persist in the ground. The point is that since many smaller UXO in Europe are deeply buried, it is feasible for pedestrians and vehicles to pass over them without causing detonation. If this UXO you drove over had detonated, you probably would not even have known it unless you had sensim in your inners. This is already in position.

Landmine/UXO contamination that presents a direct threat to the public or impedes development must be cleared; this is without question. Not everyone agrees, however, that land that does not directly threaten the public or immediately stop development does not require clearance (See Tamar Galbick’s editorial on page 9). There are far more cost- and time-effective methods to manage the risk in these areas without compromising safety.

How Deep is Deep Enough?

Calculating the factors required to nullify the effects of an underground detonation requires consideration of several variables such as the quantity and depth of the explosive and soil type. These calculations can be done using specialized software programs. The best program I have seen to date is the Conventional Weapons Effects Program (CONWEP), the current Windows-based version (2.1.0.8) is restricted due to its new features, but many people still have access to the older DOS-based program.

The Russian PMN-2 anti-personnel mine is one of the most common AP mines worldwide and is provided as an example. It contains a 104 gram main charge of a compound named TG-40, which is fairly close to U.S.-made Composition B explosives. Using the unclassified CONWEP cratering profiles with a dry, sandy clay environment at 8 centimeters, the apparent crater will be 15 cm. (6 inches) deep, and window breakage can be expected at nearly 25 meters (82 feet).

When buried to 58 cm. (23 in.) in the same environment, the blast goes to null and has no noticeable effects. If it is buried 57.5 cm. (22.6 in.), the apparent crater is only 2.6 millimeters (0.10 in.) deep, and window breakage is down to 23 cm. (9 in.) away (see Figure 1 above). Essentially, if you wear a decent set of shoes when walking over a PMN-2 at this depth and it does detonate, you might need to touch up your shoe polish. The more we tested the CONWEP predictions against various situations, the more accurate we found the predictions.

The CONWEP program was useful, for example, when we worked a 27-hectare (67 acres) clearance program for a development project in Vietnam at Vung Ha, which is south of Dong Ha in Quang Tri province. We were fortunate enough to have an overview of the development plans that called for no excavation around the site once it was cleared and indicated that between 1.4 and 4.0 m. (4.98-13.12 ft.) of soil would be deposited on top of the area when handed over. However, the national policy directed: “All landmine/UXO would be cleared to a depth of 5.0 m. [-16 ft.],” which is what we were asked to accomplish. This included clustered munitions or any other item that might be at this depth.

As part of the research and development program linked with this clearance (funded by the U.S. Department of Defense’s Humanitarian Demining R&D Program), we conducted numerous tests with the detection equipment and established a quality-control lane with identical free-from-explosive munitions buried at the maximum depths.
where they could be reliably located. The QC lane was used to test the detectors on a daily basis and the provincial authorities assessed it with their own detection equipment, agreeing that it was very realistic.

Using the development plan, we plotted what size munition would break the surface after the site was backfilled. The smallest item that would create a surface threat after the topsoil was added would be a 155-mm projectile buried 60 cm. (24 in.) under the existing surface (see Figure 2 above). This munition weighs 42 kilograms (93 pounds) and contains almost 7 kg. (15 lb.) of explosive that equates to about 35 kg. (77 lb.) of steel.

When de-tuning our detection instruments to locate the 155-mm shell at this depth we could still reliably find larger items such as 250-lb. (113-kg.) and MK-82 500-pound bombs under surface layer of a hill. Figure 4. (top) Extract from CONWEP overlaid onto CAD diagrams of Ai Tu clearance site (partial). Depicts blast limitation of MK-81 250 and MK-82 500-pound bombs under surface layer of a hill.

Figure 5. (bottom) Extract from CONWEP overlaid onto CAD diagrams of Ai Tu clearance site (partial). Depicts blast limitation following construction clearance for redevelopment of land, making munitions a much greater threat.

presenting a clear threat to the population, or is it in a position likely to present a valid threat? It is true, however, that previously cleared land may not always stay clear due to environmental factors. Flood waters can redistribute landmines and UXO the same way rocks and other debris are moved. Erosion can expose deeply buried items that were beyond the reach of detector systems used at the time of clearance, so what may have been considered “cleared to standards” at one time, may reveal hazardous items when the topsoil shifts. In addition, construction can expose buried UXO if the construction project’s scope of work is not known at the time of clearance. Often, clearance is requested for an area with rolling hills and valleys that upon completion will be used for development. The clearance team can only work from the surface that is present at the time and search as deep as the capability of their detectors. So without knowing the detailed development plan, time and money is wasted, and safety is not always assured for those who follow (see Figures 4 and 5 above).

When turned over to construction crews, the hills are often leveled out to backfill the valleys and make a flat surface for building. The clearance effort has now been wasted in two ways:

- The time spent searching for small, subsurface munitions in the valley was pointless. It is now under a soil level in which only very large munitions would be able to create a hazard.
- Larger munitions located beyond the detectors’ limitations posed no surface threat at the time of clearance. Once construction crews level out the hills, however, the previous clearance depth is exceeded, and items may now be at a position where they present a substantial surface hazard.

Flood conditions can also place landmines/UXO at a depth that is no longer hazardous, which was the case during the clearance of Vung Ha. This area typically floods on an annual basis with 5–30 cm. (1.97–11.81 in.) of silt deposited each year, depending on how high the flood waters rise. The battles ended at this site more than 30 years ago. This gives a perspective on how deep the munitions are now.

From an R&D perspective, Vung Ha received an unexpected benefit as it effectively proved how deep the detection systems being tested could search and locate. The provincial military quality-assurance teams also scanned the area with their own instruments and could find nothing remaining, so it was deemed as “meeting or exceeding the national standards.” Fortunately, the project included mechanical-assistance support to excavate the signals located at these nationally-specified depths, as this would have been manually impossible. Almost 400 items were located with an average depth of 1.25 m. (4 ft.)
Aging of Landmines/UXO

Another factor to consider is the effects of aging on munitions. The aging effects on landmines and UXO have been studied, showing that some items will render themselves useless over time, but not all of them will follow this pattern. The physical state of subsurface munitions will vary greatly depending on the design and materials used, along with the munitions’ exposure to geological and weathering conditions. Items made from poor materials placed close to the surface can deteriorate to the point of becoming non-functional over the course of a few years. Some of the Chinese-made landmines and U.S.-made cluster munitions such as the BLU-26 can come apart in a single blast. A surface UXO visible to a child can be mistaken for a toy, and it will kill them and their friends when they decide to see if it really does go boom like the mine-risk education people said.

Indistinguishable Fates

Post-war minefields close to the population usually lead to loss of limbs and lives. Anti-tank mines buried in critical roadways can kill many people on a bus in a single blast. A surface UXO visible to a child can be mistaken for a toy, and it will kill them and their friends when they decide to see if it really does go boom like the mine-risk education people said.

The demining and explosive ordnance disposal teams working in these situations carry out duties that directly prevent the loss of life and improve public safety. Clearance teams working in support of economic development tasks help to save lives and create jobs that will improve the overall livelihood of those in underdeveloped areas. These tasks deserve the most focus from international humanitarian donor funding.

Worldwide donor funding is in very short supply, and it affects all of us in this profession. The policies driving national and international goals should be readjusted to ensure that they are reasonable and that the limited funds available are maximized to save lives and support the recovery of post-conflict environments.

...see endnotes page 80

Survivor Heroes Heal Lives and Landscapes Throughout the World

Landmine and traumatic-accident victims and their families face numerous recovery obstacles in any setting, but in a post-conflict setting resources may be scarce. Victims must deal with emotional and psychological trauma, often for years after the event. These challenges range from physical limitations and psychological aftermath to the economic impact on their livelihoods. Some victims take their traumatic experience—one in which the victim is terrified, afraid for him or herself as well as for others, temporarily helpless, humiliated, and isolated—and apply them to assisting other victims through activism and support.

by Ken Rutherford, Ph.D. (Center for International Stabilization and Recovery)

I n war-ravaged countries and post-conflict regions, most landmine amputees struggle simply to survive. Victims often experience extended separations from family members, decreased employment opportunities and shifting demands. For someone missing arms or legs, tasks that were once easy to complete can become Herculean chores. This often leaves survivors and their families to face harrowing experiences and uncertain futures. Survivors may also experience psychological and cognitive damage following the accident, leaving them at risk for mental health problems, family difficulties and unemployment. Many can no longer find work and cannot afford to buy crusty bread, wheelchairs and/or artificial limbs. Survivors are often ostracized and are denied proper medical care. One thing is clear: most landmine survivors rarely return to normal lives.

Despite these discouraging obstacles, some victims have become survivor champions on their way to becoming leaders and productive community members by devoting their lives to helping other victims. They are committed to expanding the solid foundations of peer support by helping others build resilience and understanding through conversation and problem-solving. They provide practical instruction with care and compassion to thousands of survivors of landmines, trauma and war-related violence. Survivors’ peer skills are in many cases essential in helping other survivors recover. In addition to counseling, outreach workers help survivors obtain training, benefits and healthcare through local service providers. In the most extensive study of landmine/unexploded ordnance survivors ever conducted, survivors in six countries reported significantly improved perceptions of their own mental and physical health following 12 months of peer support provided by trained outreach workers.

As a token of appreciation for their leadership, I would like to highlight four of these unique and special survivor heroes—Adanun Al Aboudi (Jordan), Bekele Gonfa (Ethiopia), Jesus Martinez (El Salvador) and Nguyen Thi Kim Hoa (Vietnam). I have particularly selected them from among the hundreds of survivors I have met over the last two decades of victim-assistance work in many countries. Their leadership and capability in providing survivors with the direction to achieve their personal goals have helped—and continue to help—other victims and survivors develop their own personal strengths. Let me introduce them to you.

**Bekele Gonfa, Ethiopia**

Born the second son of a farming family in rural Ethiopia, Bekele Gonfa distinguished himself in school and at the Harar Military Academy. While serving in the Ethiopian Army, he was severely injured. As a result of the injuries he suffered, he fell victim to a landmine explosion in the town of Qore in central Ethiopia. His left leg required amputation and his painful rehabilitation took 11 months. Gonfa enrolled in Addis Ababa University when he was released from the hospital. Access to facilities was difficult for Gonfa, who was still adjusting to life as a landmine survivor when he began attending the university. Besides getting into the library and other buildings, he had difficulty traveling between classes within the allotted time. Despite the added obstacles, he obtained a Bachelor of Science in statistics.

Gonfa became Director of Landmine Survivors Network (later renamed Survivor Corps) in Ethiopia in 2003, a position he held until 2009, when Survivor Corps closed. He tirelessly worked to assist the rehabilitation of survivors, their families and entire communities throughout Ethiopia. He developed an extensive network of partnerships and collaborations that...