



Strengthening Humanitarian Demining and Related Activities Through the Emphasis on Comparative Advantages

Joe Lokey, James Madison University Humanitarian Demining Center

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Background

One of the foundations of contemporary economic systems is that expertise can create value. Based on this notion, it follows that economic efficiency results if every person does what he or she does best. Preferences, competencies, and resource capacity in the world of economics and trade drive these choices. In humanitarian pursuits, the trade aspects are less clear, and the financial aspects are less relevant, but the efficiencies gained from applying limited resources to a global crisis are still clear and relevant.

The history of landmines and the attempts of countries, organizations, and individuals to deal with them suggest that there are a range of demining activities and requisite skills required to combat the problem of mines and unexploded ordnances (UXO) that remain from internal conflict and war. Compounding the dilemma are an equally diverse number of countries, locations, terrains, mine and UXO types, cultures, clan or tribal concerns, and support mechanisms that complicate location, detection, removal, and consequence management. Until recently, only a few poorly-funded organizations were involved with international demining activities, and these few organizations lacked the resources needed to bring disparate functions together into an integrated mine action plan that made the most use of the resources available.

Few governmental activities or non-governmental organizations (NGOs) have the resources, skilled labor, technical expertise, or logistics support structure to plan, organize, execute, and sustain an independent and comprehensive mine action program in any given country or region. It is a global imperative, therefore, that cost-efficient partnering and teaming arrangements be established, encouraged, and funded to maximize the benefits to mine-affected countries. As donors, governments and institutions look to the humanitarian community for guidance, one principle that can significantly enhance the efficiency of demining-related activities is comparative advantage.

Concepts

Contrasting comparative advantage applications in international trade with similar concepts in humanitarian demining reveals certain key factors. The most notable of these factors is the potential economic and cost benefits that arise from encouraging

organizations and activities to focus on their core competencies in humanitarian demining and in other related activities. As the resources for mine action programs increase, involved organizations are attempting to

- increase their current primary capabilities,
- expand or complement their primary capabilities with peripheral activities, or
- develop new capabilities.

It is to everyone's benefit if organizations and activities focus on their core competencies and increase those activities they do best, while teaming with organizations that have a more efficient capacity to provide other related products or services (comparative advantage) in accomplishing a mutually-supported objective.

Definitions

The ideas behind comparative advantage are intertwined within trade theory and economic development. Without a broader understanding of these issues, however, the basic concepts of comparative advantage and how it might apply to mine action could be difficult to explain. Therefore, the following descriptive summaries are structured to provide

- basic concept definitions,
- certain examples of their application, and
- illustrative applications of how these concepts can be used for humanitarian demining or related activities.

Please use Table 1 as a reference point for illustrating the concepts that will follow.

Table 1

Organization	Norwich Catholic Aid (NCA)	Revlon Consulting
Labor Hours to train a mine dog (D)	3	6
Labor Hours to train a deminer or prodder (P)	6	8

(Note: All cost and workload factors used throughout this paper are illustrative only for academic presentations and bear no factual or implied resemblance to actual organizational performance standards.)

Opportunity Cost

Definition: When an activity is chosen, the opportunity cost is the benefit expected from the forgone best alternative. In making decisions, an individual or organization compares the expected benefits of one choice with the expected benefits of all other choices. The individual or organization then chooses the option that offers the greatest potential benefits. Once this option is selected, the benefits of the other options are given up, or forgone. The lost value of those forgone benefits is referred

to as opportunity costs.

Example: In the above table, if NCA chooses to focus its resources on training dogs, it forgoes any benefits that might have resulted from training prodders. As an individual, if you choose to attend college this year, your opportunity cost (the potential benefits you gave up in order to attend college) is the salary you would have received from the best job you could have held with the qualifications that you had at that time.

Application: Organizations that focus on products and services within the business community make these decisions routinely. Within the humanitarian support services structure, the lines of demarcation are rarely as clear because the choices available are less varied. Smaller NGOs usually focus on a limited range of activities, and donors frequently prefer clear objectives and small (manageable) programs to larger endeavors with multi-faceted program objectives and a wide variety of resource expenditures. However, opportunity costs must still be considered as organizational, and activity functions are contrasted and compared with other organizations performing similar activities in the same area.

Law of Comparative Advantage

Definition: The individual (or country) that has the lowest opportunity cost associated with producing a particular product should specialize in producing that product.

Example: In the previous table that compared dog training to prodder training, the opportunity cost of training a mine dog for NCA is $1D = 1/2P$, or training a dog is half the cost of training a prodder. For Revlon, the opportunity cost is $1P = 3/4D$, or training a dog is $3/4$ the cost of training a prodder. Therefore, NCA is said to have a comparative advantage in training dogs. Looking at prodders, however, the opportunity cost of training a prodder for NCA is $1P = 2D$, or the cost of training a prodder is twice the cost of training the dog. For Revlon, the opportunity cost of training a prodder is only a third as much as training the dog. Therefore, Revlon is said to have a comparative advantage in training prodders.

Application: In the previous scenario, a demining program in any given country should consider the strengths and weaknesses offered by each participating organization. In this particular case, both NCA and Revlon benefit by working together to provide a given clearance unit with trained dogs and prodders. Such cooperation emphasizes the comparative advantages of each organization.

Absolute Advantage

Definition: The ability to produce something with fewer resources than other producers use. This production ability is determined by comparing

the absolute cost of each good or service available.

Example: According to Table 1, NCA has an absolute advantage over Revlon in both dog training and prodder training because NCA's cost, in terms of hours per unit produced, is lower for both areas.

Application: Although this concept makes some enormous assumptions about other factors, absolute advantage only considers the provider who can produce an equivalent product or service at less cost than any other providers can. For example, if the Topeka Methodist Hospital can provide deminer physicals at a lower cost than the International Committee of the Red Cross (ICRC) or CARE, then they have an absolute (cost) advantage when being chosen or considered as part of a specific mine action activity or operation.

Resources

Definition: Manpower, money (funding), materials, space, and time. Expanding on the classicist definition, we strongly recommend that information be considered a critical resource as well.

Related Activities

Definition (for humanitarian demining): Surveying, marking, mapping, detection, removal, Explosive Ordnance Disposal (EOD), logistics support, mine awareness, public education, and related technologies. Related activities are victim/survivor assistance, refuge resettlement, socioeconomic reconstruction, and landmine control issues. Victim assistance includes field medicine, medical evacuation, health, rehabilitation, reintegration, prosthetics or orthotics, critical incident stress management, and other health (individual or community) related functions.

Sources of Comparative Advantages

We know that certain organizations and activities are better at certain endeavors than are others. The question then becomes, "What allows them to do what they do better than anyone else can?" There are several related factors from a variety of economic and international trade precepts that can apply to the humanitarian endeavors here as well.

Productivity (sometimes referred to as the Ricardian Model)

Individuals can determine the variations in the productivity of labor by the technological differences between countries. Workers in industrial countries earn higher wages than workers in developing countries do because industrial countries possess particular technologies that allow their workers to produce more goods. This increased production can directly impact the available choices of goods and services an industrial nation produces, which explains that nation's particular comparative

advantage in a given area.

Factor Abundance

Even though the output of goods might be equivalent (e.g., a trained mine dog), significant differences exist in the factors of production and the availability of resources needed to produce a given product. The availability of differing factors of production (land, labor, capital, technology, and infrastructure) are so varied among countries that those countries that wish to maintain a comparative advantage use relatively large amounts of their most abundant resource (Heckscher-Ohlin model).

Human Capital

Similar to the Productivity model, this factor is decided solely upon the availability of skilled versus unskilled labor. Great Britain, for example, has a well-educated labor force relative to many of the countries with landmine problems. Therefore, Great Britain has a comparative advantage in industries requiring large amounts of skilled labor. The inflicted countries, however, are usually war-torn developing nations with a large supply of unskilled labor. These nations would, accordingly, have a comparative advantage in those areas requiring large numbers of unskilled laborers.

Life Cycles

Because of advances in technology, education, and market sophistication, comparative advantage can actually shift from one nation, organization, or activity to another. The initial comparative advantage lies with the original innovation or skills base. As other countries, organizations, or individuals look to compete or to enter the marketplace, that advantage is eroded and might, in fact, shift to those taking advantage of their factors of production in order to gain market control. For example, the companies that field mine detectors that operate more effectively in highly ferrous soils have an initial advantage over detectors that are less accurate. But once the technology spreads, that advantage might weaken and actually shift to those companies that can improve on the original design.

Preferences

For every producer or provider of a good or service, there is a consumer of that good or service. Rather than being a supply factor, as is each of the previous situations, the demand side of comparative advantage recognizes that consumers have preferences that have little to do with the efficiencies of production. The preferences for a specific provider exist even when two competing alternative sources provide a good or service that is exactly equal. Many of the NGOs have spent years building solid relationships with donors and other providers, and these NGOs might be

reluctant to shift to a different source of funding regardless of the economic incentives to do so.

Strengthening Comparative Advantages

The United Nations has had the most comprehensive role in attempting to orchestrate global demining and related activities. Salaries for deminers are paid from UN trust funds. Mine Action Center management is frequently UN sourced, and a limited amount of equipment and expertise for peripheral development and equipment has made its way to the field through the UNDP. This role has been limited by reorganizations within the UN demining offices, resource realignments, lack of consensus by the demining community on the role of the UN, the application of their demining standards, and the debates around the diversion of UN demining funds for bureaucratic management and oversight. The need to emphasize comparative advantages, however, has been a UN priority for some time, as is shown in the following excerpt from a paper by Mr. Stephane Vigie.

"However, on the international stage it is also important that the principle of comparative advantage applies and that essential activities are undertaken only by those organizations with the corporate capacity and experience to meet the challenges."²

This emphasis on capacity and experience clearly shows a UN preference for the Heckscher-Ohlin model, which uses factor abundance as a determinate of comparative advantage. Mr. Vigie also suggests that new entrants carefully assess their ability to be efficient in these areas before committing resources to mine action. Given the UN's need for quick, high-visibility results and the limited funding available to achieve those results, this particular comparative advantage is necessarily a short-term solution and does little to build a long-term indigenous capacity without cooperation and consensus from the NGO community of a strong, central government support structure. In other words, this comparative advantage does little good to prime a dysfunctional pump.

However, it is also not unexpected to see shifts from differing determinants of comparative advantage as different phases of a country mine action plan evolve. The leading factor might initially be preference as established relationships within the NGO and the relief community look to build upon existing networks and procedures rather than risk donor support by "thinking outside the box" and developing innovative and creative solutions to specific mine-related problems. As solutions arise within these relationships, we would expect to see the initial life cycle determinates emerge as organizations select applicable technologies and tools for a given initiative or region. These determinates will quickly be followed by organizations with human factors advantages as low-skill, high-risk tasks begin to proceed. Finally, as small-scale programs begin to integrate, they will be augmented (and frequently subsumed) under additional management structure and technology insertion dominated by organizations or activities that have comparative advantages in productivity and factor abundance.

This cycle cannot be postulated as a model at this point because little empirical data exists to support it. From observing and discussing demining-related projects,

however, this model seems rational, realistic, and logical. The key point is that different organizations with different comparative advantages should work together as early as possible to ensure the cost effectiveness and indigenous capacity built are at their greatest.

Identify Who is Doing What

The global humanitarian demining community is relatively small, and the identification of particular organizations and activities with specific skills and talents is not difficult to accomplish. There are two Web sites that have begun to identify NGO activity and the country in which these NGOs are operating. These organizations and their on-line locations are

- [Humanitarian Demining Information Center](#)
- [CARE](#)

Both of these lists are relatively new and have only begun to build on NGO contacts and networks. Communication is the key factor in establishing a global system of information, and this open communication will not likely occur without first building trusted relationships. This initiative essentially catalogs the "players."

Identify Who Does a Given Task Well

This step is considerably more difficult because it requires a qualitative assessment and judgment, and it compares organizations that do not wish to be compared. Success, however, sells itself in the marketplace, and past performance by many organizations and activities is a reasonable basis upon which to presume future performance. If, for example, HALO Trust or Norwegian People's Aid (NPA) commit to a demining project, their reputation for results is excellent, and their expertise, skills, and training are paralleled by few. If, on the other hand, the Michigan Order of Fraternal EOD Specialists (fictitious) wants to do UXO work in Namibia, a more comprehensive review by donors or supporting governments should naturally occur. This difference in reputation does give a market advantage to early players and trusted agents already working the issue, but as we have seen, new entrants with an economic comparative advantage might serve the entire demining community by bringing down costs and by expanding the pace at which demining and related activities are accomplished.

Assess Capacity to Grow

A number of international firms are already in the field and are building a considerable amount of experience in a variety of countries. The efforts of some firms are restrained only by donor contributions and can "surge" to greater levels of productivity proportionate to the resources available. It seems imperative to identify these particular organizations at the outset of activities in order to provide the fastest initial capacity growth. Thereafter, other organizations with less experience or limited donor

support should be identified and resourced to fill shortfalls in larger programs or teamed with others in larger endeavors.

Identify Potential Organizations or Countries

This step involves locating donors and capabilities that exist but have no current active or passive role in humanitarian demining or related activity. Any excess capacity in the organizations or countries should be encouraged to be diverted or resourced against demining and augmented with national or donor funding where appropriate and feasible. It should be strongly emphasized that this process should be one of consensus and partnership. The NGO community should be heavily involved in identifying organizations with whom they feel they can establish themselves more quickly and efficiently. This involvement might not be possible in cases where the NGOs themselves are competing for certain contracts or additional funding; however, there are ample instances where NGO input can emphasize or validate the comparative advantages of other organizations.

Find Appropriate Mission Profiles or Partnerships

This process might not be as intuitive as it sounds, for relatively little multinational central guidance for humanitarian demining and related activities has been done. Demining organizations have been relatively free to pursue their own "targets of opportunity" and to develop partnerships and relationships that fit those objectives. With a stronger role by Mine Action Centers and the UN, the priorities for clearance, assistance, and technical support will be driven less by individual NGO desires and more by well-developed country plans for economic reconstruction. Once these specific tasks are identified within each country, teams and partnerships of organizations and activities should necessarily compete for or be awarded contracts for specified tasks based on the comparative advantages each teaming relationship demonstrates. This identification process is going to be difficult until country program managers learn to use comparative advantage determinations in their decision matrix. Strong central government management might also constrain or facilitate these initiatives depending on training, motivations, and political objectives.

Identify Shortfalls and Weaknesses

Absolute advantage in certain areas does not necessarily demonstrate comparative advantage. Some country programs, however, must acknowledge that some tasks will be most effectively done when the number of providers is limited or when smaller, in-country providers cannot compete with large, single-source firms for quantity, timeliness, or quality. This situation will be particularly true for "gap" activities that are critical to sustaining a country program or key to transitioning from different phases of a demining operation or survivor assistance initiative. For instance, if prosthetic development is available as well as

re-training or other skills programs, but no rehabilitation activities are there to facilitate transition, the country program might rely on an outside source with a distinct absolute advantage (cost efficient) but not necessarily possessing a comparative advantage over other firms. Likewise, if contracted sources are determined to be a "choke point" that prevents progress or success in a country program, specifically-targeted activities might be acquired or requested to replace inefficient operations.

Allocate or Recommend Resources to Build Capacity and Capabilities Where Shortfalls Exist

The emphasis of comparative advantages almost implies a stance that is directive in nature. For organizations attempting to orchestrate the participation and the activities of NGOs and others in demining operations, that "emphasis" should appropriately take on a suggestive tone or, at a minimum, a strong "recommendation." For donor organizations or governmental organizations resourcing various activities, the allocation of resources can realistically be dependent on or pursuant to the use of comparative advantages in funding activities. This process is particularly true when the goal is to build additional capacity for specific skills or logistics support to satisfy identified shortfalls in a country program. This process is undoubtedly the most difficult way to strengthen comparative advantages because it involves a selection process that applies metrics to a resource decision without that metric being universally accepted. However, there are a variety of mechanisms and measures for accomplishing this step, so it should not be viewed as a hopeless task. In almost all cases, a trusted agent will need to perform a third party assessment upon which to base qualitative decisions that will be accepted by resource provider and consumer.

Discourage Expansion or Investment in Areas Where There is Sufficient Abundance of Suppliers or Resources Available

Whereas most of the initiatives are positive, the short-term dynamic of increased funding might alter long-term plans for stability by focusing on short-term gains. The companies that possess current comparative advantages in certain areas might no longer be able to compete if they forsake those skills in favor of developing short-term capabilities in other areas. Further, additional entrants into an almost saturated market is economically unsound for everyone, for it will drive prices down disproportionately to the quality of service. It is, therefore, incumbent on donors to give preference to those existing activities that fill critical program shortfalls and needs instead of subsidizing another entrant into a field of many.

The President's Initiative

The President's 2010 Initiative on Global Humanitarian Demining aims to create an effective international coordination mechanism to ensure that sustained public and private resources for demining are directed, in an organized and rational manner, to

programs in mine-affected countries. The Secretary of State and the Secretary of Defense are working in partnership to realize the following goals:

- Ensure that global humanitarian demining is an international priority supported by adequate resources and action,
- Increase the pace and the effectiveness of demining operations,
- Bring both public and private global investment in humanitarian demining to the level of \$1 billion USD per year and direct additional resources into landmine survivor assistance,
- Develop mechanisms for matching needs and resources more effectively with a special focus on creative public-private relationships,
- Coordinate R&D initiatives and share new demining technologies and databases, and
- Create sustained assistance to landmine survivors and communities.

The concepts and principles underlying comparative advantages are useful in accomplishing many of these objectives. Because the US, along with other donor nations, will be a key player in directing the application of resources and coordinating their use, the emphasis on identifying and capitalizing on comparative advantages is a critical component in ensuring the most expedient course toward these objectives and the most efficient use of available funds. The following items are examples of achieving these objectives:

- Basing US assistance and support on given priorities, and assistance will be determined by a measurement of the host commitment and the resources dedicated to the issue.
- Increasing the pace and the effectiveness of Global Humanitarian Demining (GHD) operations will be a by-product of the proceeding issues. By emphasizing comparative advantages along the way, demining cannot proceed more quickly or be much more cost efficient.
- Matching needs and resources and creating public-private relationships is at the heart of this paper. These relationships underscore the relative importance of teaming and process improvement through efficient partnering that recognizes and exploits each partner's comparative advantages.
- Coordinating R&D initiatives avoids duplication but can be carried further by identifying and emphasizing comparative advantages in research productivity and bringing a good idea expeditiously to the evaluation stage. The sharing of databases is also a common area that can benefit from comparative advantages by focusing on those organizations most capable of integrating large amounts of data and "packaging" useful material for use in the field. Quite frequently, the comparative advantage for both of these organizations will come from their lack of strong alternative missions or objectives and will be highly focused on R&D and database management.

In creating sustained assistance to landmine survivors and communities, a strong investment must be made in host-nation capacity building. In the short term, investments in NGO initiatives seem the logical course versus corporate or commercial activities. In the long run, however, local initiatives are critical to establishing a sustained capacity for victim/survivor assistance. As one NGO phrased it, "Aid ain't forever."³ This area might be where private initiatives, embedded in the community, are capitalized and guided into long-term care capabilities. Because a

survivor will require \$3,000 - \$5,000 USD annually in medical, rehabilitation, and training service and a surviving 10-year-old victim might have up to 26 different prosthetic devices in their life, this "long view" is an imperative.

Challenges

There are obvious assumptions and constraints that permeate each of these observations and generalities. There are, however, some "challenges" to meet in order to establish an empirical base for support.

Comparative advantage's success requires a number of ceteris parabis (all else assumed equal) assumptions be in place. The comparative advantage approach presumes perfect competition in the marketplace. Such assumptions have led to criticisms of the foundation upon which comparative advantage might or might not be a viable production or service concept given that these factors are rarely, if ever, equal. This criticism will be particularly true in the multinational environment that characterizes most national-level mine action programs.

It is the primary goal of all humanitarian demining initiatives to develop an indigenous, sustainable, host-nation capacity. This goal infers capacity building, infrastructure development, and socioeconomic development. There are some caveats and warnings to consider before assuming that all development based on comparative advantages is good.

- Comparative advantage unnecessarily relegates developing mine-affected countries to those enterprises that require low-skilled or unskilled labor and focuses on basic production that denies them the dynamic of the marketplace. This limitation can be overcome with changes in resource availability (infusion of cash, for example) that might then shift advantages.
- The size, scope, and effort of each country program and initiative should be evaluated based on its merits and within predetermined guidelines. These factors are frequently subjective, so consensus on the criteria must be established if the results of any sort of qualitative assessment are to be accepted.
- Comparative advantages, as a tool, might mean subjugating more "comfortable" methods to a means of lesser importance. This subjugation might reduce overall priority cost effectiveness in favor of a less effective solution for political, cultural, or even religious reasons.
- Priorities are different among countries, governments, and organizations. The almost insidious, ever-present "hidden agenda" must be acknowledged as underlying many discussions and evaluations. This problem, however, can be overcome, or at least mitigated, with a consensual focus on mutual objectives, strengths, areas of agreement, and an equitable basis for cost sharing. Building a "stake" in the outcome will more readily enable organizations and activities to rely on their own comparative advantages and acknowledge and respect the capabilities and contributions of others.
- Donors and other resourcing agencies must recognize the authority of the host nation or of their designated representatives. Too frequently, developmental activities take on a paternal characteristic that minimizes the role of the host nation and reduces their input into decision making. Even if clear, logical, and

efficient choices are made by the use of comparative or absolute advantages, the host nation should be involved in the decision or the selection process where feasible or realistic. Not to do so could mitigate any benefits.

A key element in strengthening comparative advantages in humanitarian endeavors, particularly in demining, is establishing a community consensus that partnerships and teaming arrangements that emphasize a particular organizational strength are more effective in the long run. This process is not as intuitive as first imagined, for the small NGO and aid organizations with long-established relationships have been in place for some time, and they distrust outside influences seeking to realign their resource allocations. This relationship is even recognized by the US Department of State in observing that, in demining, "collaborative efforts are not much in evidence."⁴

Summary

The use of comparative advantages to strengthen humanitarian demining and related activities will greatly benefit the global effort and provide significant resource savings to donors and governmental sources. The identification of these advantages, whether comparative or absolute, is a significant challenge. The identification of the appropriate teaming and partnership arrangements is even more difficult and can only be "encouraged" through incentives and investments in programs that fit the desired criteria. The long-term payoff for global humanitarian demining ultimately will be a community that functions in a more integrated fashion, is less disparate and divided, and shares a common vision at multiple levels of assistance. This objective should remain an institutional imperative to focus limited resources toward outcomes that use the synergy created by shared comparative advantages in accomplishing what they cannot do independently.

Humanitarian Demining and Related Activities: Functional Activity Outline

1. Mine Awareness
 - Public Awareness
 - Media Relations
 - Landmines and Children Focuses
 - Awareness Training
 - Program Development and Assessment
 - Regional and Cultural Issues
2. Minefield Management
 - Surveying
 - Marking and Safety
 - Focusing on Security
 - Mapping and Terrain Analysis
 - Focusing on GSP Training
3. Mine Identification
 - Mine Facts
 - Mine Producers
 - Common Locations
4. Mine Detection

- Mine-clearance Training
 - Program Management
 - Mine Dog Programs
 - Safety
 - Standards
 - Communications Capabilities
5. Landmine Handling
- Safety
 - Transportation
 - Storage
 - Disposal
 - Materials for Demolition
6. Victim Assistance
- Field Medicine
 - Trauma Management
 - Medical Support (MEDEVAC)
 - Children's Programs
 - Prosthetics Development
 - Psychological Impacts
 - Rehabilitation Program
7. Demining Equipment
- Detectors, Mechanical
 - Detectors, Hand-held
 - Detectors, Other
 - Equipment for Safety
 - Equipment for Support
 - Maintenance
8. Demining Research and Development
- Detection Equipment
 - In Situ Neutralization
 - Safety Equipment
 - Ground Penetrating Radar
 - Chemical Detection
 - Medical Equipment
9. Socioeconomic Issues
- Economic Development
 - Environmental Impact
 - Indigenous Displaced Peoples (IDPs) and Refugees
 - Labor Force
 - Medical Resources Impact
 - Landmine Control

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4 Cunningham, G. K., Colonel, USMC, US Department of State, PM/ISP, in a speech entitled "A View of the Future of Humanitarian Demining Programs," December 15, 1997, at James Madison University.
