

Measures of Effectiveness for Humanitarian Assistance Operations

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Summary

Assessing the effectiveness of an ongoing military humanitarian assistance operation (HAO) is difficult. These operations tend to be less familiar to the military; the operation's objectives are often vague; and the initial available information on a humanitarian crisis is often incomplete or inconsistent. But such an assessment is important to provide insight into what strategies are working; where assets need to be shifted; whether more (or fewer) forces are required for specific tasks or the mission as a whole; and when the end of the operation (end state) has been reached.

To help solve the problem of assessing effectiveness in HAOs, a military command can use a variety of analytical tools, including measures of effectiveness (MOEs). Such measures are used in combat operations as indicators of an operation's progress. However, in past HAOs when measures were developed to track progress, they may not have been thought through clearly. Such measures were often developed very quickly, with little or no opportunity to develop a comprehensive package or to test the appropriateness of individual measures before putting them into use. Also, many confuse any quantitative information with MOEs. MOEs measure effectiveness; other statistics measure other things that can add to a picture of an HAO, but they do not measure effectiveness.

It is important to put analytical tools in the proper context. They are one way of determining information requirements, analyzing information, and organizing the results so that they are understandable and useful. These tools help a commander to gain a picture of the operation that enables him to make more-informed decisions. But they should not be an end in themselves or a substitute for a commander's judgment.

This paper uses lessons from past operations, exercises, and studies to contribute to the military's understanding of how to assess progress

in an HAO. We discuss not only MOEs, but other measures that are useful. This analysis is provided in connection with a Center for Naval Analyses (CNA) study intended to help the Marine Corps improve its ability to conduct HAOs [1 – 13]. The Marine Corps Combat Development Command (MCCDC) and I Marine Expeditionary Force (I MEF) sponsored this study.

Key findings

We've identified five types of measures:

- *Level-of-effort measures* describe the magnitude of specific efforts.
- *Task-performance MOEs* provide additional insight into how well military and humanitarian tasks are proceeding in support of the HAO.
- *Mission-level MOEs¹* provide insight into progress toward the larger political objectives.
- *Transition measures* provide insight into progress toward the transition of responsibilities to another force or organization.
- *General indicators* provide insight into progress on improving the situation. Operational indicators are a non-quantitative tool—a supplement to MOEs—that can “indicate” progress.

These different types of measures build upon each other and should be used together to get a more comprehensive view of the situation the military is trying to measure. The first three types of measures parallel the mission-analysis process: Political and policy level objectives are addressed through mission-level MOEs; from these objectives, tasks are derived, and these are addressed through task-performance MOEs; and from the tasks, required capabilities and forces are derived, and their actions are addressed by level-of-effort measures.

1. These MOEs measure progress toward the larger political and policy objectives set forth for the mission. The mission will encompass a variety of military and humanitarian tasks, which are measured by task-performance MOEs.

These types of measures are part of a framework for developing a comprehensive set of measures for HAOs.

Based on our analysis of past operations, we found that HAOs generally involve some or all of the following components: *diplomacy, security, infrastructure and institutions, public health, and the agriculture and economic situation.*

Diplomacy is not discussed in this paper, as our focus here is on operations. However, military and humanitarian actions should be aligned with ongoing diplomatic efforts.

These HAO components and the types of measures used to address them provide a framework for developing measures to assess effectiveness. However, measures within this framework should be examined as a whole because these components and types of measures are inextricably linked. For example, actions taken to support identified security tasks may improve the public-health situation. Relief-organization efforts to increase food distribution may improve the security situation, and ultimately these efforts may be reflected in security and public health mission-level MOEs.

MOEs must be carefully chosen. Table 1 summarizes criteria for MOE development.

MOEs must be used appropriately. Potential problems with using MOEs are as follows:

- If not carefully chosen, the cost in time and effort for collection and analysis of MOE data may outweigh the benefits.
- One pitfall is that a single MOE may come to be viewed as the key to success, rather than as a possible indicator of it.
- Factors outside the military's control, such as the weather or the effectiveness of other militaries, the host nation, relief organizations, and so forth, influence overall effectiveness in an HAO, and this will be reflected by the MOEs.

With these problems in mind, a commander needs to place the proper emphasis on measures and put them in the proper context. In

addition, he must ensure that they are used correctly. Measures are a tool for understanding the humanitarian situation and how the military is affecting this situation, and improving military effectiveness.

Table 1. Criteria for choosing analytical measures

Criteria	Definition
Mission-related	Mission-level MOEs should relate to the political objectives set forth for the overall mission. The other MOEs and measures will be more specifically focused, but must still maintain a connection to the mission's objectives.
Comprehensive	The full list of task-performance MOEs should cover all tasks in support of the mission and should expand if the mission expands.
Meaningful	Mission-level MOEs should focus on the effectiveness of the overall mission, task-performance MOEs should focus on the effectiveness of tasks, not their accomplishment, and transition MOEs should focus on the degree that the tasks are transitioning to the follow-on organization. They should all be evaluated together.
Measurable	Those managing the analytical measure effort must give clear guidelines so that information can be collected and measured consistently over time and across areas.
Sensitive	The level of MOE measurement should provide enough detail to ascertain whether the situation is changing. MOEs should support trend analysis.
Timely	Mission-level MOEs should be responsive to changes in a timely manner to affect policy.
Cost effective	The number and type of analytical tools should be sufficiently reasonable not to levy too high a burden on those tasked with the effort.

Introduction

Measuring the effectiveness of military operations is not a new subject. Such measures have long been developed and used, with varying degrees of success, to evaluate progress during combat operations.

Tracking the movement of the forward edge of the battle area is an example of a measure that has been used in previous combat operations to provide part of the picture regarding progress (or lack of progress). During Operation Desert Storm, the attrition of SCUDs, tanks, and artillery were measured to assess progress in eliminating the enemy's warfighting capabilities.

A familiar, and controversial, measure was the body bag count in Vietnam [14]. This experience provides a caution regarding the care that must be taken in developing, choosing, and applying such measures. This is all the more true for HAOs because they tend to be less familiar.

The past few years have seen an increase in the military's involvement in humanitarian assistance and peace operations. Measuring progress is important in these operations for the same reasons it is in combat. Measures provide a better picture of the situation, the level-of-effort being applied against specific problems, the effectiveness of these efforts, and, ultimately, an assessment of progress toward the desired end state.

Recent experience in HAOs has seen the use and visibility of a number of measures. In these operations, many MOEs or other measures were identified. During Operation Provide Comfort, the command tracked the number of blankets delivered to displaced persons in the mountains in Northern Iraq; during Operation Sea Angel in Bangladesh, tons of food delivered was a key measure; and in Somalia, the number of convoys escorted was one of the measures used.

However, many of the measures relied on in past operations and exercises were developed quickly; consequently they sometimes lacked proper context. This includes the examples cited above. All are legitimate measures, but without additional information they lack appropriate context. The number of blankets delivered is an indication of a certain level-of-effort being applied toward such deliveries, but it doesn't address the effectiveness of this effort until it is compared with the overall need for blankets. Moreover, it was important that the immediate need for blankets (and seeing this reflected by corresponding measures) not distract from the accomplishment of higher-level objectives, such as the resettlement of displaced persons and refugees.

Recent experience in HAOs has provided some insights as to who uses MOEs and related measures, how these measures are being developed and used, and how well the measures are serving the users. In this document we discuss several means of organizing these measures and criteria for considering their development and application. We also examine the subject by reviewing past experience and using a recent exercise that closely examined MOE development as a case study [14].

Purposes of measures

Measures are tools. They can provide a description of ongoing activities, measure how well a given level-of-effort is succeeding in accomplishing certain specified tasks, and provide insight into the overall progress of the operation.

Assessing the effectiveness of the military's efforts during an HAO may be difficult because the relative unfamiliarity of HAOs, as well as vague objectives for a mission or a lack of important information. But an assessment of operational effectiveness is important in order to provide insights into strategies that work, where assets may need to be shifted, whether more (or fewer) forces are required, and when the end of the operation (end state) has been reached.

MOEs may support different users, and they can serve different purposes at different levels. At the task level, MOEs can provide insights

regarding how effective a given level-of-effort has been in addressing a specific problem. This may help a commander by highlighting problems in a specific geographic region, and by providing a more complete picture on which to make decisions about allocating forces to tasks. At a higher level, MOEs can assist in assessing progress toward the end state. At this level, measures can be used by the combined/joint task force (C/JTF) commander to address progress toward the political and policy-level objectives set forth for the mission, or to address the transition of responsibilities to follow-on organizations.

Examining MOEs over time can identify important trends in the operation. Close examination of these trends can be used to support cost-benefit analysis, to show where the most progress can be made, and to show where additional investments of time and effort may not offer much return. Trend analysis can also highlight particular areas of concern. An improving trend in most, but not all, relief sectors may warrant detailed investigation and possibly a change in the focus of effort.

Even the process of developing measures to assess effectiveness can serve an important purpose. This process offers opportunities to engage the other key HAO players. General MOE development can be done pre-crisis, and refinements based on the specifics of the situation and mission can be done during the planning phase of a specific crisis. Further refinements can be made during execution. An inclusive approach to MOE development affords important coordination benefits. It can help to keep the various components of an HAO aligned, with all players having a shared sense of the mission, its objectives, tasks, priorities, and definitions of success.

Maintaining an alignment between an operation's political and policy-level objectives (which may be revisited and updated during the operation) and the ongoing military and humanitarian tasks is key to preventing mission creep. MOEs may be useful as a tool in preventing mission creep by providing a better picture of how efforts are being applied and whether the objectives and tasks remain aligned.

Road map

The analysis presented here expands upon work started in [14] and [15] in support of research conducted for the USMC HAO study at CNA and analysis conducted by the CNA representative at III MEF. This study is sponsored by I MEF and MCCDC. Its objective is to identify and analyze alternative ways the Marine Corps might consider using to improve its ability to conduct HAOs. Other analysis from this study is presented in [1 – 13].

The remaining sections discuss criteria for developing measures for assessing effectiveness, structuring HAO measures, developing MOEs, and our conclusions.

Criteria for developing MOEs

To develop measures to assess military effectiveness in HAOs, some criteria should be established. Various studies have addressed the necessary criteria [14, 15, 16, 17], which are as follows:

- Mission-related
- Comprehensive
- Meaningful
- Measurable
- Sensitive
- Timely
- Cost effective

Mission-related. By mission-related we do not mean that the measures should address only the military mission and the associated tasks. Measures for assessing effectiveness should focus on the overarching mission—which is the reason for the intervention—and not solely on the few specific military tasks assigned to the command and the level-of-effort associated with those tasks. The tasks the military conducts should influence the humanitarian situation. Also, part of the mission eventually is to leave, therefore transition measures are needed.

Comprehensive. No single measure can capture all of the information relevant to the humanitarian mission. The complete list of measures should cover all aspects of the mission and expand if the mission does. Commands should not focus solely on the security aspect of the mission (because the military is most familiar with that part), nor should it fail to include measures that cover extra tasks (in the false belief that not acknowledging new tasks prevents mission creep). The different types of measures should complement each other.

Meaningful. It is imperative that measures to assess effectiveness provide meaningful measures of progress. Measures associated with tasks should focus on the effectiveness of tasks—not on their accomplishment. Measures associated with transition should focus on the degree that the follow-on tasks are being taken over by the follow-on organization. Measures associated with the overall mission should focus on the effectiveness of the military intervention on the overarching situation. All five types of measures should be used together.

Measurable. Those collecting data for measures should be able to assign consistent and accurate values to the measures. This will ensure that they are measured consistently over time and space (to see trends and compare different areas), and understood by those using the MOEs at all levels of command—especially at higher headquarters distant from the area.

Sensitive. The real purpose of these measures is to serve trend analysis—showing progress or no progress. The measurement level should provide enough detail to enable observers to ascertain whether the situation is changing. Trends can be used to support cost-benefit analysis; to show where the most progress can be made; and to show where additional investments of time and effort may not offer much return. Trend analysis can also highlight particular areas of concern. An improving trend in most, but not all, relief sectors may warrant detailed investigation and possibly a change in the focus of effort.

Timely. Measures used to assess effectiveness should be responsive to the changes they are trying to measure quickly enough for the command to detect the changes and act on them.

Cost effective. The number and types of measures used to assess effectiveness should be sufficiently reasonable that they do not create a burden on those collecting and measuring them. These criteria must be balanced against the comprehensiveness of MOE criteria.

Structuring a broad set of HAO measures

In this section we describe types of measures used to assess effectiveness. It shows how some types parallel key elements of mission analysis and how they should be integrated. We then use the types of measures and the components of HAOs to provide a framework for developing the measures.

Using mission analysis to develop appropriate measures

Mission analysis is a crucial part of the planning process for any operation. This process is envisioned as beginning with the political objectives for the operation being translated into appropriate, executable military and humanitarian tasks. These tasks will then require certain capabilities, and an appropriate force must be tailored to provide these capabilities. This is the model for the mission analysis process, and it serves very well in ensuring alignment of tasks, capabilities and forces with the overall objectives. It is also very useful for determining the force that can most efficiently and effectively conduct the mission. The value of this model for mission analysis was demonstrated clearly during Operation United Shield, which supported the withdrawal of UN forces from Somalia. Compressing or eliminating elements of this process can lead to misalignments between the objectives for the mission and the tasks being conducted (which is the principal factor underlying mission creep).

This translation of objectives to tasks to capabilities to forces is often a challenging effort in HAOs and peace operations. The initial set of political objectives may be vague and the implications of certain objectives and their associated tasks may not be readily apparent.

The process of translating political objectives into military and humanitarian tasks shapes the course of the mission to follow. An essential part of mission analysis is identifying and communicating the implications of the mission's political objectives to the forces

involved in executing associated tasks. It is also essential to ensure that there is an understanding, at the political and policy levels, of the potential implications associated with the execution of certain tasks. Having thus determined the required set of military and humanitarian tasks, planners must identify the capabilities needed to support these tasks and tailor a force that has these capabilities.

These efforts during mission analysis are vital not only to ensuring alignment between objectives and tasks, but also to identifying where MOEs can be applied at various levels. There is some hierarchy to the set of MOEs, and here an association is made between key elements of mission analysis and MOE development:

- Mission-level MOEs are needed to address progress made toward achieving the ultimate political objectives.
- Task-performance MOEs address specific military and humanitarian tasks.
- Level-of-effort measures are needed at the level of required capabilities and forces.

Level-of-effort measures focus narrowly on specific force actions. Task-performance MOEs may encompass many of the actions described by individual level-of-effort measures, placing these actions into a larger context, broadening the nature of the measure, and frequently indicating an action's effects relative to total requirements. Mission-level MOEs are broader still, encompassing how the necessary tasks are meeting higher-level objectives associated with the affected nation's overall security and humanitarian situation.

Mission-level MOEs

At the mission-level, MOEs should help address progress toward the political objectives set forth for the mission. From recent operations, these objectives have included providing a secure environment that allows the delivery of humanitarian assistance, promotes the redevelopment of key institutions, and supports democratic elections. Because the objectives they address are encompassing, mission-level MOEs must be broad. Specific examples of the various types of measures are included later in this paper.

Task-performance MOEs

There may be many supporting tasks associated with the mission's objectives. MOEs at this next level will support an evaluation of task-performance. These task-performance MOEs will be more narrowly focused than the mission-level measures. They will address specific actions taken to address specific military and humanitarian tasks. Many of these measures compare the actions undertaken to address a specific situation with the total requirement.

Level-of-effort measures

These measures address individual actions taken by the force. Many of these are familiar measures that are often widely cited in situation reports (SITREPs) or in media reports. Level-of-effort measures provide insight into the magnitude of military support to an HAO. Examples include tons of food delivered or number of convoys escorted. Such measures are not MOEs because they don't measure effectiveness, but they often support the measurement of broader-level task-performance or mission-level measures.

Other types of measures

In addition to the three types of MOEs previously discussed, two other types of measures are worth considering: transition measures and general indicators.

Transition measures

The military component of an HAO or peace operation often concludes before the humanitarian or diplomatic components. Also, the U.S. military's involvement will end and the operation will transition to a follow-on UN force, the host-nation government, or the relief organization. Because of these timing issues, the transition of responsibilities is an important matter. Transition measures provide insight into progress on the transition of the HAO to another organization. Transition measures can be useful in helping to assess the particular responsibilities assumed by follow-on organizations. An effective transition is important to sustain the military's accomplishments and prevent a relapse into earlier crisis conditions.

General indicators

Certain general indicators may provide insights into the current situation. These indicators, unlike MOEs, are a non-quantitative tool, however, they can supplement MOEs and indicate progress or difficulties. Examples of general indicators include food riots (indicating food shortages) or crowds returning to markets (indicating the public's perception of a reduced threat of violence).

Integrating the types of measures

As in mission analysis, the parallel types of MOEs need to be examined as a whole, not independently. In mission analysis, the political and policy objectives are the starting points for developing military tasks, and the capabilities and corresponding forces needed are defined by the tasks. The intent is that the tasks and forces address the political objectives. Therefore, during operations the objectives and associated tasks need to be constantly examined to ensure that they are complementary. Similarly, for MOEs, the task MOEs are developed from the mission-level MOEs, and the level-of-effort measures are a function of the task MOEs. MOEs can be used as a tool to evaluate whether tasks are addressing the objectives through mission-level MOEs. In other words, the types of MOEs cannot be examined in isolation. They must be examined together in order to understand the dynamic between objectives, tasks, and forces.

Similarly, transition measures must be examined along with task and mission-level MOEs. Transition measures measure only whether the transition is (or isn't) taking place, not whether the follow-on force is conducting tasks to meet the objectives. Therefore, transition measures should be examined together with task and mission-level MOEs to ensure that the transition is effective.

Characteristics of HAOs for the framework

We've discussed the different levels of MOEs and how they correspond to mission analysis. The next issue is to define the framework that can be used to assess the military's effectiveness during HAOs. Our intent is to provide a framework for developing MOEs that could

expand or contract based on the specific situation. We used the different types of measures, starting from mission-level MOEs down to level-of-effort measures using mission analysis, and included transition measures and general indicators. Because HAOs can be very broad in scope, we then delineated the measures even further.

Based on our analysis of past operations in [1 – 13], we found that HAOs generally have some or all of the following components:

- Diplomacy
- Security
- Infrastructure and institutions
- Public health
- Agriculture and economic situation

We won't discuss diplomacy in detail in this paper because our focus here is on operations. However, diplomacy should be recognized as a key component of HAOs that can influence operations on the ground. It should be conducted in parallel with the military and humanitarian efforts.

Security is often the key reason for military intervention in an HAO (i.e., to provide a secure environment). Providing security may be very broad in scope: providing protection for coalition/U.S. forces; providing security so that relief supplies can be delivered; or providing a strong presence to prevent conflict between parties, for example. In Restore Hope, the military provided security to relief convoys and distribution centers. In Haiti, military presence provided a secure environment for controlling violence between the previous dictatorship and the incoming government. In Provide Comfort, the military provided security so that the Kurds could return to their homes.

Infrastructure and institutions are also other common components of HAOs. The military may be asked to rebuild institutions, such as the local police force, a court system, schools, and so forth. In the case of Haiti, the military was supporting the new Haitian government. Part of an HAO could include repairing or replacing infrastructure, such as sewage and water systems; clearing debris; and restoring public

works. For example, in Restore Hope the military built bridges and repaired roads to support the overall mission of getting relief supplies to those who needed them. And in Bangladesh, during Sea Angel, the military cleared debris allowing renewed access to key elements of the infrastructure to support the Bangladesh government.

Public health is also a key component of HAOs and this may be one of the reasons the U.S. Government is asked to intervene in the first place. Public health reflects the general health of the population, which is influenced by disease, starvation, and lack of sanitation. Almost all HAOs with U.S. military intervention have a public-health component, including Restore Hope, Provide Comfort, Sea Angel, and others.

Finally, the agriculture and economic situation can be a major factor in an HAO. The economy may be destroyed by environmental factors affecting the food supply; or conflict may be preventing farmers from cultivating their land which was the case in Restore Hope.

Defining the framework: Putting the pieces together

All or some of these general components have characterized past HAOs, as the examples show. Using these components, along with the different types of measures, provides a framework for developing measures of effectiveness. Table 2 illustrates this framework.

Table 2. Framework for developing measures

Characteristics/ Types	Security	Institution/ Infrastructure	Public Health	Agriculture/ Economic
Mission-level MOEs				
Task MOEs				
Level-of-effort measures				
Transition measures				
General Indicators				

When developing MOEs using this framework, the MOEs defined by the components and types of MOEs should not be examined in isolation. These characteristics are often interrelated or inextricably linked. For example, the military may be asked to provide security for transporting medical supplies. These related characteristics affect the security situation, as well as the public-health situation. These tasks, in turn, may affect the overall policy objectives of improving security and decreasing the death rate due to disease.

The next section provides an application of this framework that can be used when developing and using measures before, during, and after an HAO. Our intent is to provide a starting point and a few examples that illustrate how to develop measures for a mission.

Developing HAO measures

The previous section described a framework for developing HAO measures. This section presents the evolution of MOE development relative to the phases of an operation and an example for developing HAO measures. This example is certainly not inclusive for all HAOs. The measures need to be developed on the basis of the particular situation. The intent here is only to provide a starting point for the military.

Measures and the phases of an operation

Pre-crisis

Development of candidate MOEs can begin before any operation is imminent or any crisis action planning is initiated. The pre-crisis phase offers an opportunity for careful, deliberate examination of potential types of missions; coordination with other key players involved in humanitarian assistance and peace operations; and for MOE testing during exercises.

Crisis indicators—for example, the onset of drought conditions or an increase in factional fighting—can be used to identify regions where U.S. intervention may be required. These crisis indicators are another type of measure, and the information collected to develop these indicators (and particularly information derived from more-formal assessments made as a crisis worsens) may provide an important baseline against which later measures can be compared. Often, the relief organization or the Center for Disease Control make mission-level measurements, particularly in the area of public health, before military intervention is imminent. These can be used as crisis indicators.

Planning for a specific crisis

At some point, certain crises will reach the point where specific operational planning begins. As previously discussed, there are natural parallels between certain types of measures and key elements of mission analysis. As planners proceed through the planning process, they should refine the more general measures identified during the pre-crisis period, tailoring the measures to the specific objectives required at the mission level, the military and humanitarian tasks to be performed, and the application of effort against these tasks.

Developing and choosing the appropriate measures can be a valuable element of the planning process. Because of the parallels with mission analysis, determining the set of measures can be a useful way of ensuring that objectives, tasks, and capabilities/forces are aligned, and that these have been identified to a sufficient level of detail. It also offers opportunities to engage the other key players in the operation, including relief organizations, coalition forces, and the UN (if possible), to frame the full set of objectives for the mission, the full range of tasks that will be conducted, and the application of effort to specific tasks. Experience with previous "joint" MOE development suggests that it can be an effective coordination mechanism.

During the planning phase, some initial information should be available from a range of sources on the situation in country. As noted, such information and assessments are important because they can allow a baseline to be developed for later comparisons.

Mission execution

During mission execution, the set of measures can, and at times should, be further refined. This phase is also where most of the actual measurements will take place.

Measures should be refined as the nature of the mission and its objectives, tasks, and priorities change. These changes occur as improved information becomes available on the initial situation, and also as the situation changes over time (e.g., in Provide Comfort, measuring how well efforts were proceeding to provide shelter, blankets, etc. in the camps wasn't relevant as the mission proceeded into the repatriation

of displaced persons and refugees phase). As noted, the measures (and the process associated with developing, choosing, and applying the measures) may provide a tool for ensuring continued alignment among political objectives, military and humanitarian tasks, and specific efforts. The risk of mission creep is thus decreased.

In performing the actual measurements, there will be a number of sources of information. Military forces routinely collect some of this information, but some of the measures will require additional collection. The host nation, key organizations within the host nation, and relief organizations are also likely to be key sources of information that will support these measurements.

Transition

During the transition phase, the responsibility for tasks currently being accomplished by departing forces (which are still required during subsequent operations) must be transitioned to another organization. Transition measures allow for a clear representation of the fraction of these tasks that have been handed to follow-on organizations. Examples include the fraction of required airfields turned over to a follow-on force's control or the fraction of major supply-route maintenance turned over to the host nation or to a contractor.

Later rehabilitation and redevelopment efforts (post-military involvement)

Because other key players may continue operating in country long after the military component of the mission reaches an end, it is important to consider the later requirements of rehabilitation and redevelopment. Although the military will not be involved in these phases, it may be able to help set conditions that allow operations to proceed successfully into these phases. A key consideration associated with transition is ensuring that accomplishments are sustainable into these later phases. Measures can provide some input regarding accomplishments, their sustainability, and their scope compared to the necessities of rehabilitation and redevelopment.

An example

We are providing an example for no particular scenario other than some form of military response to a humanitarian situation, be it purely humanitarian or part of a larger effort, such as peacekeeping. We present our examples using the framework we have defined. Because of space considerations, we have divided the measures according to the components of an HAO: security, infrastructure and institutions, public health, and agriculture and economic situation. However, because the measures are interrelated between the components and the types of measures, they should be examined as a whole.

Security

Table 3 provides examples of security measures for each of the five previously discussed types of measure. Because the military is the primary force to provide security, it would be responsible for collecting the data for developing the measures. In some cases, relief organizations may have some information to contribute to the measure-development effort, such as the fraction of the whole inventory stolen from warehouses.

Table 3. Example of security measures

Type	Examples of specific measures
Mission-level MOEs	1. Death rate due to violent cause 2. Fraction of total traffic needing no security 3. C/JTF casualty rate (by contingent as a fraction of that coalition partner's total force)
Task-performance MOE	1. Area patrolled divided by total area requiring patrolling 2. Convoys escorted divided by the convoy escort requirement
Level-of-effort measures	1. Number and size of patrols 2. Number of convoys escorted, and size of forces assigned to convoy escort
Transition measures	1. Fraction of security requirements assumed by host nation or follow-on forces
General indicators	1. Food riots 2. Crowds in markets 3. Human-rights violations

Infrastructure and Institutions

Table 4 provides an example of infrastructure and institution measures for each type of measure. Infrastructure and institutions make up another area that has required major tasking for the military in past operations. Thus, the military will probably need to collect the data for developing measures, particularly at the task-performance level. Some of the mission-level data needed for measure development may be available through relief organizations or in other assessments that are routinely conducted for HAOs, such as the disaster-assistance-response-team survey.

Table 4. Example of infrastructure and institutions measures

Mission-level MOEs	<ol style="list-style-type: none"> 1. Fraction of local institutions able to meet local needs 2. Percentage of areas where required basic services can be provided 3. Fraction of displaced persons and refugees repatriated to their homes
Task-performance MOEs	<ol style="list-style-type: none"> 1. Number of police divided by number required 2. Number of courts divided by number required 3. Fraction of required airfields, ports, and major supply routes opened to traffic 4. Fraction of required food, potable water, sanitation, etc. being provided
Level-of-effort measures	<ol style="list-style-type: none"> 1. Number of trained police 2. Number of visual flight rules-capable airfields being operated 3. Number of miles of roads improved to desired condition
Transition measures	Fraction of required responsibilities (running ports or airfields, maintaining roads, providing lift, and so forth) turned over to the host nation, contractors, follow-on forces, and so forth.
General Indicators	Elections

Public health

Table 5 provides some examples of public-health measures for each type of measure. Most mission-level measures are collected by relief

organizations in the host nation or by the Center for Disease Control (CDC). The data to calculate the other measures would need to be collected by the military in conjunction with relief organizations and the host nation.

Table 5. Example of public-health measures

Type	Examples of specific measures
Mission-level MOEs	1. Crude mortality rates 2. Starvation rate 3. Cause-specific death rates
Task-performance MOEs	1. Fraction of supplies delivered vs. required 2. Fraction of sanitation services provided vs. required
Level-of-effort measures	1. Number of supplies delivered 2. Tons of food delivered 3. Gallons of water provided
Transition measures	1. Fraction of requirements being met by the follow-on organization
General indicators	1. No walking skeletons 2. No visible corpses

Agriculture and economic situation

The military may not be asked to intervene in the area of agriculture because the relief community usually addresses those requirements. In addition, the military is not trained to address agriculture needs. However, it can perhaps influence the agriculture situation by providing security for relief convoys, providing a sufficiently secure environment for people to go to markets, and so forth. The military may also have a direct impact on the economic situation. The local population can be employed by the military to conduct humanitarian tasks, such as cleaning up and distributing food. In addition, if the military begins to rebuild institutions, it is creating a potential source of employment by the local government or business.

Table 6 shows some examples of agriculture and economic measures for each type of MOE. Again, these measures should not be examined in isolation, but as a whole among the types and categories. Much of

the data for the measures will be collected by relief organizations or the host nation, particularly the mission-level MOEs. Some of the data for the other measures would need to be collected by the military.

Table 6. Examples of agriculture and economic measures

Type	Examples of specific measures
Mission-level MOEs	1. Fraction of land cultivated vs. total arable land 2. Fraction of population having no food-aid requirement vs. total population 3. Fraction of population able to grow or buy food 4. Employment rate
Task-performance MOEs	1. Fraction of seeds or tool kits provided vs. need 2. Fraction of population employed by military in food for work programs
Level-of-effort measures	1. Number of seed/tool kits provided 2. Number of people employed by the military in food-for-work programs
Transition measures	1. Fraction of population transitioning from food for work to permanent employment
General indicators	1. Market price of food 2. Types of food in market

Conclusion

Choosing good measures and measuring them well are necessary actions, but they are not sufficient to ensure successful measuring efforts. Measures to assess effectiveness must also be used appropriately. They are not a cure for the problems of military intervention in HAOs. MOEs have several potential dangers that are related to the criteria for MOE development:

- Collecting the data for and analyzing the measures may become costly in terms of time and effort spent.
- Viewing one measure as the “ultimate” measure and the key to HAO success excludes many other possible indicators of progress.
- Using biased or inaccurate data to develop measures can inappropriately influence whether the military continues a mission. Some factors are outside the military’s control, such as the weather or the effectiveness of other militaries, the host nation, UN agencies, and relief organizations that can affect the measures. The data used for developing the measures must be examined carefully for bias.

Given these potential problems when using MOEs, the job of the commander is to place the proper emphasis on MOEs and to put them in the proper context so that they are used correctly. When MOEs are used properly, they will provide a more sophisticated understanding of the humanitarian situation and the military operation. They also can be used to improve the effectiveness of the military’s efforts in an HAO.

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