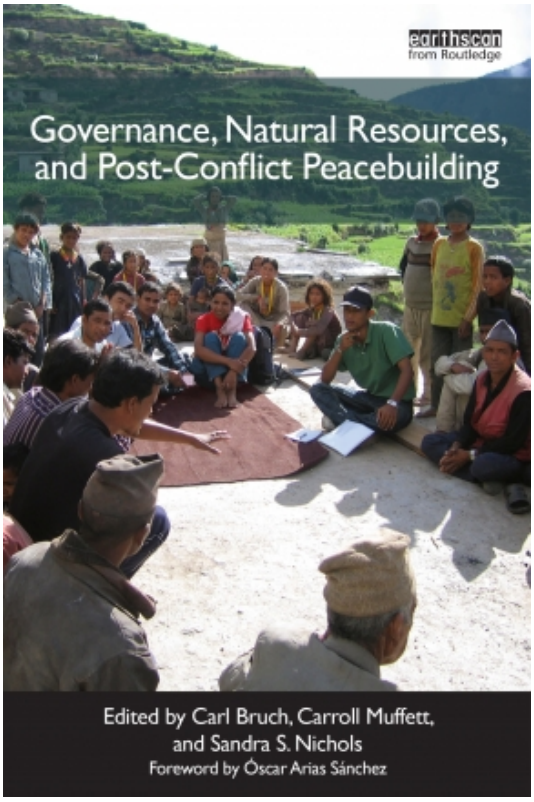

Environmental Stewardship in Peace Operations: The Role of the Military

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Environmental stewardship in peace operations: The role of the military

Annica Waleij, Timothy Bosetti, Russ Doran, and Birgitta Liljedahl

As the number of peace operations has surged over the past sixty-five years,[1] so has the range of duties that such operations are expected to perform. One area that has come under increasing focus is environmental stewardship—the management and protection of the environment and natural resources—in post-conflict situations. In many such settings, the environment and natural resources play a crucial role in physical, social, and economic recovery. By making a positive contribution to environmental protection and natural resource management, the military component of peace operations can help shape the overall post-conflict situation and determine how future peace operations will be perceived.[2]

In practical terms, the military engages with the environment and natural resources in four principal ways:

- Ensuring that troops and civilians are not at risk from environmental hazards.
- Avoiding competition with local communities for scarce natural resources.
- Assisting with capacity building in the management of natural resources and the environment.[3]

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[1] For the purposes of this chapter, the term *peace operation* refers to peace support, peace enforcement, peacekeeping, and peacebuilding. Between 1948 and 1990, the United Nations launched eighteen peacekeeping missions; between 1990 and 2012, it has launched over fifty. Collectively, peace support organizations have almost 255,000 troops in the field, and the UN has more troops on active operational service under its command than any other entity except the U.S. military (CIC 2013). For discussion on the spectrum of peace operations, see St-Pierre (2008).

[2] For further discussion of peacekeeping and the environment, see Sophie Ravier, Anne-Cecile Vialle, Russ Doran, and John Stokes, "Environmental Experiences and Developments in United Nations Peacekeeping Operations," in this book.

[3] It is important to note that although the military may engage in capacity building, this is not its primary role; other actors in the peace operation are often more suited to such activities.

- Minimizing the environmental impact—the "boot print"—of the military operation itself.[4]

The principal focus of the chapter is on the last of these elements, specifically sustainable operations. The reason is simple: a peace operation that is intended to help maintain stability and security cannot credibly do its job if, by its very presence, it is causing environmental damage. Sustainable operations depend on sound environmental management—which in turn, requires three elements:

- Well-established environmental doctrine that is constantly updated to reflect best practices from current operations.
- Environmental awareness training to instill a strong environmental ethic at all levels in the chain of command, and to familiarize military personnel with the tools and techniques of environmental protection.
- Systematic collection of environmental intelligence.

This chapter is divided into seven sections: (1) a brief discussion of the role of the military in protecting the environment and managing natural resources in peace operations; (2) an overview of environmental considerations at each phase of the operational life cycle; (3) a review of current environmental doctrine for peace operations; (4) a discussion of environmental awareness and training; (5) a discussion of environmental intelligence; (6) a description of various approaches to sustainable operations, with examples drawn from various peace operation efforts; and (7) a brief concluding note on the future of peace operations in relation to natural resources and the environment. Throughout the chapter, sidebars illuminate specific issues.

THE ROLE OF THE MILITARY IN ENVIRONMENTAL PROTECTION AND NATURAL RESOURCE MANAGEMENT

The environment and natural resources have always had an influence on military operations: on the one hand, the military has had to develop its own supply chains to deliver commodities such as water, fuel, and construction material to theater, in order to reduce both an operation's vulnerability and its dependence on the infrastructure of the receiving nation. On the other hand, largely for financial reasons, the military has had to avoid unintended consequences from the deployment itself; environmental degradation, for example, can result in liability

[4] Environmental considerations may be part of a mission's mandate. For instance, United Nations Security Council Resolution 2100 on the establishment of the United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) requests the United Nations Secretary-General to consider the environmental impacts of the operations of MINUSMA when fulfilling its mandated tasks and, in this context, encourages MINUSMA to manage the impacts, as appropriate and in accordance with applicable and relevant United Nations General Assembly resolutions and United Nations rules and regulations, and to operate mindfully in the vicinity of cultural and historical sites (UNSC 2013).

claims for polluted land. Recently, however, a more holistic understanding of the relationship between the military and the environment has emerged: in this approach, military necessity is balanced with attention to environmental impacts. So, for example, in the course of deployment, an effort would be made to avoid fueling tensions related to natural resources.

This shift in perspective stems largely from an increasing recognition of the direct and indirect environmental effects of peace operations (see sidebar). Road construction, for example, can affect the natural flow of water in an area, harming the local ecosystem and ultimately damaging livelihoods. The very presence of a military operation can exacerbate competition for natural resources, creating tensions that can eventually ignite further conflict.[5] And in the worst case, peacekeepers themselves may illegally exploit natural resources, damaging the credibility—and, by extension, the effectiveness—of the peace operation.[6]

Reasons for environmental stewardship

- Protecting the health and well-being of deployed troops.
- Reducing the environmental impact of the mission, and thereby improving relations with local communities (since the military operation is not polluting their land, water, or air).
- Reducing direct costs (for example, for fuel) and potential costs (for example, for cleanup of contaminated land).
- Where appropriate, assisting the local population to move sustainably toward the next phase of the post-conflict period.

Given the seriousness of the potential consequences, principles, policies, procedures, and organizational structures are required to minimize environmental damage. Although certain environmental consequences may be unavoidable in a critical situation, others can be prevented, without compromising the mission, through thoughtful planning and implementation by a properly trained force.

In addition to balancing operational and environmental goals, the military must coordinate with multiple stakeholders, each with differing environmental standards and priorities (see sidebar). For example, in complex post-conflict situations, military and civilian organizations are increasingly

The importance of coordination

Among the activities carried out in the course of peace operations are quick-impact projects (QIPs)—limited humanitarian projects, such as the construction of a school or a road, or the drilling of a well, that are undertaken using resources that are already on site. Although QIPs may be well intended and are sometimes successful, any such efforts that affect natural resources or the environment must be carefully coordinated with military and civilian authorities. For example, drilling a well without an understanding of the overall hydrology in an area may result in so-called water mining, which reduces the water available in surrounding wells. In Chad, a nongovernmental organization helped Sudanese refugees plant trees, not knowing that the local inhabitants viewed tree planting as one of the customary means of claiming ownership to land. Several people were killed in the ensuing conflict between the refugees and a neighboring tribe.[a]

[a] Personal communication, C. Kelly, independent consultant, November 26, 2008.

[5] For instance, excessive extraction of groundwater for troop needs might cause tensions with neighboring residents, and the placement of military facilities on productive lands may force local populations to use land that is at greater risk of erosion and degradation.

[6] Lansana Gberie and Global Witness, among others, have addressed peacekeepers' involvement in illegal activities related to natural resources (Gberie 2005; Global Witness 2009, 2010). See also Annica Waleij, "Crime, Credibility, and Effective Peacekeeping: Lessons from the Field," in this book.

likely to be working side by side. Because the two types of organizations have different tasks and cultures, as well as different operating procedures, codes of conduct, and rules of engagement, coordination of civilian and military activities requires clear lines of communication (Paris and Sisk 2009). And when it comes to environmental protection and natural resource management, the military can play a supporting role, but civilians should take the lead.[7]

THE ENVIRONMENT AND THE OPERATIONAL LIFE CYCLE

Once the political and military decision has been made to participate in a peace operation, environmental considerations should be incorporated into each phase of the mission: planning, predeployment, deployment, rotation, redeployment, and postdeployment (see figure 1).[8] The following sections summarize environmental procedures and processes for each phase of a military operation.

Planning

Due diligence—that is, a system for ensuring that all reasonable efforts are made to prevent environmental damage—is considered good practice. The greater the level of understanding achieved before deployment, the better prepared the force will be to ensure the sustainability of operations. Before deployment, and as early as possible in the planning phase, it is essential to develop a clear and holistic understanding of natural resources and the environment in the mission setting.[9]

During the planning phase, initial environmental analyses are instrumental for ensuring that environmental considerations are reflected in the operations plan and other planning documents (such as annexes, field operating procedures, standard operating procedures, concept plans, and manuals). For instance, to avoid potential

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[7] The role of the military is also determined by the wider political and diplomatic setting. For example, the military's emphasis on environmental issues (and the resources allocated to those issues) is likely to reflect the level of environmental awareness and commitment of the sending nation. As discussed by Bruce Jones, Richard Gowan, and Jake Sherman, for a peace operation to succeed, its mandate must match the resources assigned to it—which are, in turn, determined by the overall political situation (Jones, Gowan, and Sherman 2009; see also UN 2000). Limits set by the receiving nation or by UN mandates may also shape peace operations. It is important to note, in this context, that UN mandates reflect the level of environmental concern of the member states, and that levels of concern vary among member states.

[8] The *Environmental Guidebook for Military Operations*, which was created through a collaborative effort on the part of the Finnish, Swedish, and U.S. governments, covers the essential elements of environmental protection for a military operation and defines tasks and responsibilities for all levels of command (Bosetti et al. 2008). Although the guidebook is designed for use by any sending nation, it consists of recommendations only and does not necessarily reflect official policy or doctrine.

[9] This understanding must be based not only on an assessment of current conditions, but also on the development of future scenarios. Two principal variables in such scenarios are population growth and climate change, both of which shape natural resource needs and options.

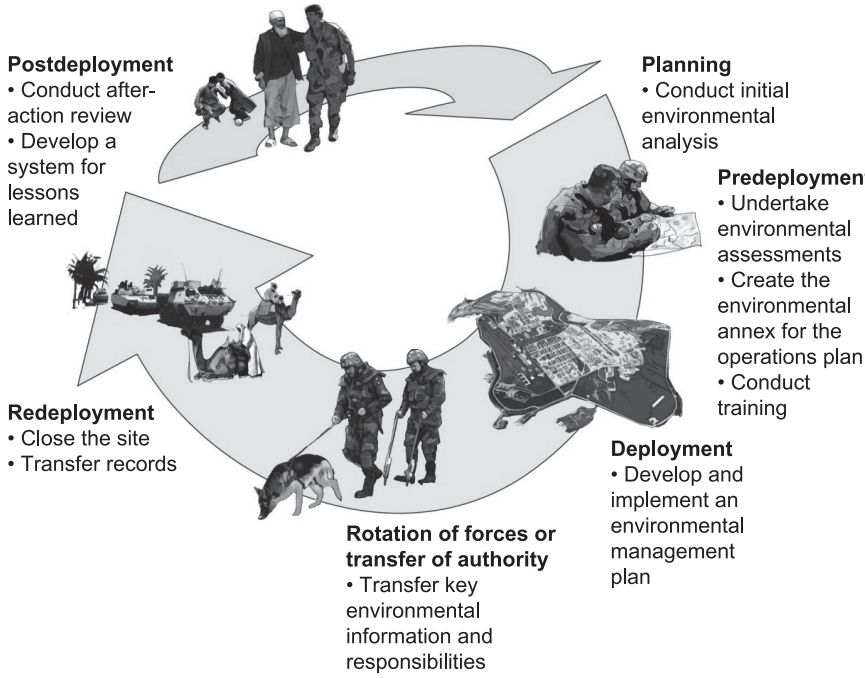

Figure 1. Environmental considerations in the operational life cycle
Source: Hans Lundholm in Bosetti et al. (2008), adapted by authors.

competition over (or depletion of) natural resources, resources that may be of significance for the operation, such as water and construction materials, must be evaluated by analysts and planners. The operations plan annexes, which are more detailed planning documents for selected functional areas, typically include an environmental annex, which should detail roles and responsibilities associated with environmental management throughout the chain of command.

Predeployment

In the predeployment phase, the staff of the planning and operations section conduct environmental assessments to (1) identify and quantify the environmental risks to which troops may be exposed; (2) document existing environmental damage within the proposed area of operations; and (3) determine the extent to which operations may significantly and permanently affect the environment or the well-being of the local community. Such assessments include, for example, environmental risk assessments and environmental impact assessments.[10] (See

[10] Ideally, an environmental assessment will be conducted by an environmental expert, an environmental engineer, or both, but the actual entity that conducts the assessment will vary depending on the sending nation and the organization of forces.

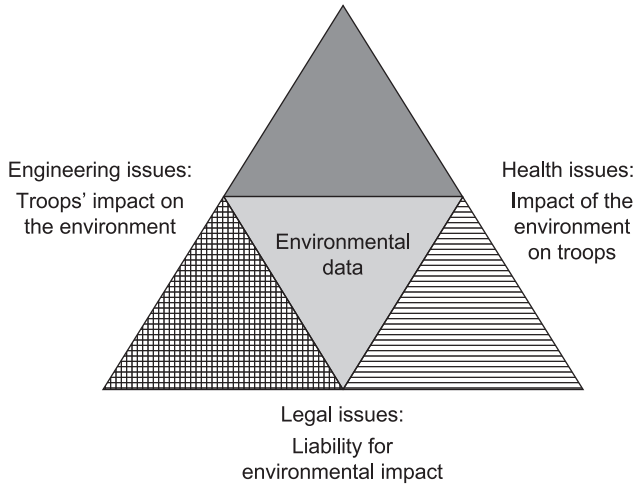

Figure 2. A matter of perspective: The use and interpretation of environmental data

box on next page for examples of environmental issues military organizations have had to face.)

As indicated in figure 2, the environmental data gathered in the course of various assessments will eventually be used in three different ways: to evaluate the troops' impact on the environment, the impact of the environment on the troops, and the potential for legal liability. Because most environmental problems eventually raise health concerns, legal concerns, or both, communication and co-operation among staff with environmental, medical, and legal expertise is essential to ensure that environmental assessments address all three perspectives.

As the force prepares to mobilize, planners and environmental officers should (1) identify supplies and equipment that will be required to support the mission in accordance with the requirements set forth in the environmental annex and (2) assemble information about existing environmental conditions in the deployment area, including intelligence assessments and reports from site visits.[11] Before deployment, specific site surveys, including an environmental baseline survey, should be undertaken to confirm planning assumptions and to further assess and document environmental conditions at the deployment site.[12]

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[11] Although this chapter uses the term *environmental officer*, there is no standard term for such a function. As of this writing, most peace operations do not have an environmental officer, but there is usually someone (often an engineer) who is tasked with addressing environmental issues.

[12] For templates for environmental baseline surveys, see Bosetti et al. (2008) and NATO (2013). (Some organizations, including the UN, use the term *study* instead of *survey*.)

Peace operations and the environment: Four examples

The four vignettes that follow—from different parts of the world, and vastly differing circumstances—illustrate the variety and complexity of the environmental issues that military organizations may be called on to address, and the risks to which they may be exposed.

Rwanda: Stopping the spread of disease

In 1994, the U.S. government sent troops to provide humanitarian aid to Rwandan refugee camps, where crowded conditions and poor sanitation were feeding a vicious cycle of disease: people were falling ill from consuming contaminated water, and the lack of proper waste disposal was leading to further contamination. To break the cycle, troops helped improve land management, increased access to clean water, and arranged for proper sanitation and waste disposal.[a]

Kosovo: Serving at a contaminated site

During the 1980s and 1990s, studies found high concentrations of lead in the water, soil, and air of Mitrovica, Kosovo (HRW 2009); despite these findings, the Trepča mines remained in operation yielding lead, zinc, and other minerals until 1999, when war forced it to close. In 1999, as part of a mission led by the North Atlantic Treaty Organization (NATO), French troops were deployed to Mitrovica, where they were stationed near former factories and lead smelters. In June 2000, a year after the conflict had ended, the local management of the Trepča mine unilaterally decided to reopen the facility. At approximately the same time, high lead levels began to show up in the blood tests of French troops stationed in Mitrovica (Créhange 2007). In response, the Interim Administration Mission in Kosovo decided, in August 2000, to close the Trepča facility and to evaluate the situation with the assistance of external consultants; local health workers; and KFOR, the NATO force in Kosovo (HRW 2009). Once the troops' elevated blood lead levels had been confirmed, the soldiers were carefully monitored, and tour lengths were limited.

The troops were not the only ones at risk, however. The resulting public health crisis—not to mention the outcry from human rights groups—demonstrates the harm that can come about from the failure to address environmental risks.

Sudan: Safely disposing of solid waste

The base camp that served as sector headquarters for the United Nations Mission in Sudan (UNMIS), 2005–2011, was located in Juba, in South Sudan, and was home to approximately two thousand troops and civilians.[b] The camp was adjacent to Juba airport, which was used not only by the UN but also by commercial airlines. Initially, solid waste from the camp was dumped in a hole on the outskirts of the camp grounds, but there were problems with this arrangement: the local population would scavenge at the waste dump; waste was being blown about by the wind; birds and pests inhabited the area; and smoke from the burning waste lingered—all of which posed dangers to health. The combination of smoke and floating waste fragments rendered visibility at the airport so poor that it was at risk of being shut down. Because the waste problems were jeopardizing the operation, resolving the problem was a high priority: using resources from the mission budget, UNMIS engineers created a fenced waste disposal site that included incinerators, hazardous waste storage, and an engineered landfill for the disposal of ash. The system has been expanded to all UNMIS sites.

Iraq: Restoring the Mesopotamian marshlands

Between 1991 and 2003, Saddam Hussein's regime nearly destroyed the Mesopotamian marshlands by building massive drainage structures that diverted water from 8,000 square miles of marshes. By 1999, the marshlands had been reduced to 7 percent of their original size: as a result, many native species were lost, an estimated 150,000 people were displaced, a natural filtering system that had protected rivers and the Persian Gulf from pollutants was devastated, and a culture rich in history was destroyed (Gould 2004; Lonergan 2012).

Since the overthrow of Hussein, in 2003, Iraq's Ministry of Water Resources (MWR)—with the assistance of the U.S. Agency for International Development and the U.S. Army Corps of Engineers (USACE)—has been working to restore the nation's water infrastructure, including the ecosystem of the marshlands. On the basis of its experience with large watershed systems in the United States, the USACE, through its Hydrologic Engineering Center (HEC), developed a reservoir system–simulation model to facilitate both day-to-day operational decisions and long-term water management in Iraq. This will help reconstruct Iraq's historic water system and restore the marshes. The partnership between the HEC and the Iraqi engineers proved vital: the Iraqi engineers' hands-on experience and familiarity with Iraq's topography, combined with years of data that had been carefully recorded in notebooks, ensured that the model would function satisfactorily. Once the HEC model was complete, MWR engineers were trained in its use, and can train others in turn (Gould and Hanbali 2004; Gould 2004; Lachman et al. 2007).

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[a] In this context, *land management* refers to the proper siting of waste disposal facilities, latrines, wastewater discharges, water points (where water is dispensed for use), and drainage arrangements to prevent contamination.

[b] UNMIS was divided into six sectors. The mission headquarters was located in Khartoum, and each of the six sectors had its own sector headquarters. As of July 9, 2011, UNMIS was redesignated; it is now the United Nations Mission in the Republic of South Sudan (UNMISS) and is authorized through November 30, 2014.

Deployment

Once troops are deployed, the environmental officer needs to create and regularly update a written environmental management plan. The plan (1) establishes the roles, responsibilities, and standards for effective environmental management and (2) provides a framework for maintaining records of site assessments, decisions made in the field, environmental incidents, and specific actions taken. Another function of the environmental management plan is to enable the environmental officer to transfer key information to his or her replacement (in the case of rotation of forces) or to the receiving nation (in the case of transfer of authority).

Rotation of forces or transfer of authority

Rotation of forces occurs when forces from the same nation relieve troops deployed in an area of operation; transfer of authority occurs when authority is shifted to troops from another contributing nation or to the receiving nation. In preparation for the rotation of forces or transfer of authority, the environmental officer should prepare to transfer key information and responsibilities to his or her replacement or to the receiving nation.

Redeployment

Closing a site or transferring it to the original owner or to another nation affects both parties: unnoticed or undocumented contamination can influence future land use and lead to unforeseen cleanup or liability. As part of the closure or transfer process, it is essential to assess and document the final condition of the site to determine whether it was damaged by the force, and to identify any legal or health-and-safety concerns or obligations. Ideally, the mission will have established useful infrastructure (such as roads and engineered landfills) that can be transferred to local authorities upon the departure of the mission.[13]

Of special concern is any accumulation of hazardous waste. Often, the only practical solution for dealing with such waste involves expensive and complicated arrangements to transport the waste back to the nation where the hazardous substances originated.[14]

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[13] Decisions on which infrastructure is appropriate for handover must take local needs and capacities into consideration. For example, complex technical systems that require expensive replacement parts may not be appropriate for handover because of the expense and expertise required to maintain them.

[14] Arrangements for the international transport of hazardous waste are governed by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, as well as by regional conventions such as the Bamako Convention (for Africa) and the Waigani Convention (for states in the Pacific). For further information on the Basel Convention, see www.basel.int/.

Postdeployment

The postdeployment phase occurs after forces have withdrawn completely from the area of operations; the vital functions of this phase are typically executed outside the deployment site. With respect to environmental management, postdeployment functions would include archiving important documents, reviewing environmental management operations, and collecting lessons learned from the area of operations.

DOCTRINE

The increasing involvement of the military in post-conflict situations offers an opportunity to demonstrate sound environmental management and leadership—in other words, to set an example. Doctrine determines how the principles of environmental protection will be applied in uncertain and complex settings; doctrinal publications are paramount for implementing those principles.

Most developed nations (and their military organizations) have extensive regulations, policies, and protocols to guide environmental protection. In the context of peace operations, such nations generally rely on their own environmental standards, since those are typically more stringent than those set by sending entities such as the UN or the North Atlantic Treaty Organization (NATO). Other nations, including some of the major contributors of troops to current peace operations, have less well-developed environmental standards; in such cases, the sending entity is responsible for providing guidance on environmental matters.

This section reviews environmental protection doctrine for peace operations that were in place or in development at the time of writing. It is important to note, however, that regardless of doctrine, peace operations are subject to national laws and to multilateral environmental agreements that govern many aspects of the environment, including natural resources, conservation, forestry, freshwater, toxic and hazardous substances, and the management of coastal areas.[15]

The UN and NATO

In June 2009, the UN Department of Peacekeeping Operations (DPKO) and the UN Department of Field Support (DFS) promulgated their first environmental policy (DPKO and DFS 2009a);[16] DPKO and DFS have also drafted accompanying environmental protection guidelines (DPKO and DFS 2009b), and are in the

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[15] When facing environmental decisions, many sending nations apply either their own environmental legislation or that of the receiving nation, whichever is more stringent. But if there is a conflict between operational imperatives and environmental protection, operational imperatives take priority.

[16] In July 2007, as a part of an ongoing reform of UN peacekeeping, DFS was created from the logistics and administration support function of DPKO.

process of developing a waste management policy. DFS is also engaged in other environmental actions: it has undertaken a greenhouse gas inventory of all missions led by DPKO and the UN Department of Political Affairs (DPA); it is drafting an emissions reduction plan for greenhouse gases; and it is required to report improvements annually to the Chief Executives Board of the UN system.[17]

The DPKO-DFS environmental policy, which applies to military, police, and civilian components of UN field missions, provides an overall framework for addressing environmental issues; describes how environmental responsibilities are distributed; and requires everyone, throughout the chain of command, to take responsibility for environmental protection. The draft guidelines also contain references that provide a basis for establishing an environmental management plan and standard operating procedures for addressing major environmental issues. Using the DPKO-DFS policy and draft guidelines as a basis, some field missions, including the UN Mission in Sudan (UNMIS),[18] have developed and implemented their own policy and guidelines (UNMIS 2009a, 2009b).

NATO-led military operations are subject to an environmental policy and an environmental protection doctrine (NATO 2003, 2014).[19] NATO has also drafted four Allied Joint Environmental Protection publications, which address environmental protection best practices, environmental standards and norms, and environmental management guidelines (NATO 2011a, 2011b, 2011c, 2013).[20]

Because waste and oil spills have traditionally been the most visible (and costly) environmental impacts of military operations, a significant amount of UN and NATO doctrinal material addresses waste management and the handling of hazardous materials, including petroleum products (DPKO and DFS 2009b; NATO 2009, 2011c, 2012). Both organizations emphasize the following:

- The waste management hierarchy (reduce, reuse, recycle).
- The importance of protecting health and safety, ensuring resource efficiency, and minimizing the environmental impact of operations.
- The integration of environmental protection into all aspects, and at all stages, of operations.

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[17] These actions are being undertaken as part of the UN's overall goal of achieving climate neutrality. In October 2007, the Chief Executives Board called for all UN organizations to complete greenhouse gas emissions inventories by the end of 2009.

[18] As of July 9, 2011, UNMIS was redesignated; it is now the United Nations Mission in the Republic of South Sudan (UNMISS) and is authorized through November 30, 2014.

[19] NATO's published policy, doctrine, procedures, and instructions are the primary sources of guidance on environmental protection. More detailed and comprehensive guidelines for a given operation are provided in an appendix attached to the engineering annex of the operations plan.

[20] In addition to contributing to joint publications on environmental protection, many nations have developed their own environmental protection doctrine.

Table 1. Summary of UN and NATO environmental best practices regarding natural resources

Environmental category	*Recommendations*
Timber for construction and fuelwood	Avoid using timber of unknown origin for construction; it could have come from native forests or from endangered tree species. Avoid the use of fuelwood (firewood or charcoal) if possible; if unavoidable, verify the source to prevent damage to wildlife and the soil.
Erosion	Activities within the mission area may cause erosion beyond the mission site. Inspect the area inside and around the mission site frequently. Keeping the soil covered at all times can mitigate or prevent erosion. To the extent possible, water flows should be controlled to prevent erosion.
Wild animals and plants	Avoid disrupting fauna corridors or engaging in unregulated felling of trees during construction and other mission activities. If disruption is likely, select a new site or consult with local authorities and adjust activities accordingly. Do not violate local legislation or international treaties on the protection of wildlife or plants.
Water conservation[a]	Water needs should be determined prior to deployment, and local water resources should be protected from overexploitation. To avoid drawing water from an aquifer more rapidly than it can recharge, water use should be in accordance with sustainable practices. All water collection systems should be optimized to prevent leaks and evaporation.
Energy conservation	Without affecting the comfort of mission personnel, strive to reduce energy consumption.

Sources: DPKO and DFS (2009b); NATO (2011b).
Note: Unless otherwise noted, the practices highlighted in this table are common to the UN and NATO source documents.
a. Addressed only in the NATO document.

Although none of the documents focus specifically or in detail on natural resource management as such, the subject is addressed in both the Environmental Guidelines for UN Field Missions (the draft DPKO-DFS environmental guidelines), and in the draft of NATO's Best Environmental Protection Practices for Military Compounds in NATO Operations (DPKO and DFS 2009b; NATO 2011b), which draws heavily on the DPKO-DFS draft guidelines. Table 1 summarizes the key aspects of natural resource management addressed in these two documents.

The European Union

Until recently, the European Union (EU) lacked strategic military-level guidance material for environmental protection. To address this gap, work was initiated, in 2010, on the development of an environmental concept for EU-led military

operations (Council of the EU 2010).[21] An environmental concept went into effect in September 2012 (Council of the EU 2012b). At the operational level, Operation Althea, the EU's military operation in Bosnia and Herzegovina, has developed a comprehensive environmental package (EUFOR 2005a, 2005b). And at the political level, the European Commission and the European Council have financed several studies on the nexus between natural resources and conflict.[22] Similarly, the European Security Strategy explores climate change and water scarcity in relation to future conflicts (Council of the EU 2003; European Council 2008).

AWARENESS

Environmental awareness sets the conditions for sound environmental management; it is thus essential for the military to provide education and training in environmental awareness. At the NATO School, in Oberammergau, Germany, for example, officers and civilians who have responsibilities related to environmental protection can take courses that cover topics such as environmental law; environmental policy, practices, and procedures; and environmental management within the context of NATO military operations.

In 2006, environmental awareness training was initiated for UN peacekeepers. The first training took place in May, when DPKO organized a trial five-day training session at the UN logistics base in Brindisi, Italy, to educate deployed UN environmental/sanitary engineers about their environmental responsibilities and to familiarize them with the then-forthcoming DPKO-DFS environmental policy and guidelines. The training addressed environmental management policy, environmental assessments, environmental monitoring, water management, renewable energy, and energy conservation. Participants also gave presentations on the environmental challenges they had encountered in their respective operations, which included deployments in Haiti, Kosovo, Liberia, and Sudan (Borla, Liljedahl, and Waleij 2007).

In July and October 2008, two more trial training sessions were held in Juba, South Sudan, for countries that had contributed troops to UNMIS.[23] In

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[21] Several relatively recent concepts that are relevant to environmental protection have been developed within the EU; these include the military engineering concept for EU-led operations (Council of the EU 2007); the logistics support concept (Council of the EU 2011); the host nation support concept (Council of the EU 2012a); and the health and medical support concept (Council of the EU 2014). (The EU uses the term *concept* where NATO, for example, would use the term *policy*.)

[22] The European Commission is the executive body of the EU; the European Council sets the general direction and political priorities of the EU. For examples of studies financed by these two bodies, see Carius, Tänzler, and Feil (2007) and Global Witness (2010).

[23] This training was undertaken by DFS, UNMIS, the Swedish Defence Research Agency, and the Swedish Armed Forces. The Swedish contribution was funded by Sweden's Ministry for Foreign Affairs. Because of the successful outcome of the trial efforts, the engineering and training sections of UNMIS headquarters developed additional environmental awareness and training materials for the mission.

addition to topic-specific briefings, the sessions included a tabletop exercise and a field demonstration of a brick-making machine that uses high pressure (instead of fuelwood) and requires almost no water. The session focused particularly on POL (petroleum, oil, and lubrication) handling, spill prevention, and waste management. Because the Juba base camp was sited in an area where the groundwater level is normally high, hazardous materials—for example, from oil spills—could easily have percolated down to the groundwater and polluted the aquifer.

As a complement to the lectures, participants engaged in a remediation exercise to demonstrate the biodegradation of a small oil spill from a generator farm at the base camp. The exercise was carried out with existing equipment, such as shovels and barrels (an excavator would have been needed for larger oil spills), and with material—such as cow manure, sawdust, and hay—that could easily be acquired. The goal of the exercise was to demonstrate to participants that a great deal can be accomplished using local and readily available resources, and to reinforce the notion that every individual can and should be an environmental steward (see box).

Doing the right thing

Experience has shown that when troops are faced with a temporary reduction in tasks and a surplus of time, the result can be either good or bad deeds.[a] Accordingly, when operations are slow, military commanders often have troops undertake projects that, for example, support human health, foster socioeconomic development, or improve relations with the local population. In Sierra Leone, for example, United Nations peacekeepers volunteered their time to help rebuild mosques, and thereby gained the trust of Sierra Leoneans.[b] In the Democratic Republic of the Congo, in contrast, UN peacekeepers engaged in poaching and illegal fishing;[c] and at the UN Mission for the Referendum in Western Sahara, military observers vandalized ancient rocks, damaging archaeological sites (UNSC 2008, 2009).

Amid the media attention that is often directed to bad conduct on the part of military forces, one factor that is often overlooked is that making the "right choice" is often a matter of awareness, attitude, and training. A 2008 report by the RAND Arroyo Center described the importance, for most deployed troops interviewed in the study, of "doing the right thing," for instance, when it comes to preserving biodiversity (Mosher et al. 2008, 37). David E. Mosher and colleagues found many cases, for example, in which U.S. Army units had done things to protect or restore the environment not because they had to, but because they believed it was the right thing to do. Soldiers generally want to protect the environment, but without a deliberate and purposeful effort to instill and foster environmental stewardship among deployed troops, any positive environmental protection efforts are just happenstance and exist only in a fragile state. Involvement and support at the command level are essential (Waleij et al. 2011).

During the United Nations Mission in Liberia (UNMIL), the military component of the mission lacked the resources to undertake the many humanitarian assistance projects that the communities had requested, but UNMIL engineers undertook the projects anyway, funding the activities mostly through personal resources or from donations from the governments and people of their respective countries (Momundu 2007). In Haiti, a Brazilian engineering unit that was part of the United Nations Stabilization Mission in Haiti established a recycling center in the Haitian capital of Port-au-Prince. And as part of the Billion Tree Campaign of the United Nations Environment Programme, troops in eleven peacekeeping missions worldwide have spent time planting trees in their areas of operation (UN News Centre 2009).

Apart from building trust with communities and boosting local support for peace operations, activities like these also serve as recreation for off-duty troops—an important need that is not always met. Given the complexity of environmental systems, however, it is important to coordinate such efforts with civilian authorities, in order to avoid unintended environmental damage.

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[a] For further discussion of the conduct of peacekeeping troops, see Annica Waleij, "Crime, Credibility, and Effective Peacekeeping: Lessons from the Field," in this book.

[b] Personal communication, S. Ali, professor of environmental studies at the University of Vermont, April 7, 2009.

[c] Personal communication, M. Languy, World Wildlife Fund, December 2009.

Although time constraints prevented a proper analysis of training needs and the participants' roles and responsibilities varied widely, all the participants stated in their evaluations that they had found the training useful; they also stated that it had changed their thinking about the environment, that it would change their environmental behavior, or both. As one of the attending officers noted, "We should bring this issue as a part of habit, now I will enforce my troops to have the same awareness."

In December 2009, in Kinshasa, Democratic Republic of the Congo, DFS, the Swedish Defence Research Agency (FOI), the United Nations Environment Programme (UNEP), and the United Nations Mission in the Democratic Republic of the Congo (Mission de l'Organisation de Nations Unies en République Démocratique du Congo, or MONUC)[24] undertook a fourth environmental awareness training workshop for UN peacekeepers; this workshop, for MONUC personnel, was tailored specifically toward natural resources. Lessons from the workshop have since been incorporated into a training module on natural resource management in post-conflict countries, which was developed by FOI on behalf of the United Nations Institute for Training and Research; in November 2010, the module was piloted with various UN environmental focal points in Nairobi, Kenya.[25]

INTELLIGENCE

Mission planning must be informed by environmental intelligence for three reasons:[26]

- To ensure adequate resources, including funding.
- To avoid damage to the environment and natural resources of the receiving nation.
- To take advantage of opportunities to strengthen local natural resource management.
- To understand if environmental issues or natural resources are potential drivers of the conflict.[27]

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[24] As of July 1, 2010, MONUC was redesignated; it is now the United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (Mission de l'Organisation des Nations Unies pour la Stabilisation en République Démocratique du Congo).

[25] Since only a few field missions have environmental officers, most missions have appointed environmental focal points—that is, a staff member or members who act as the mission's point of contact on environmental issues, in order to facilitate policy implementation, information distribution, response to queries, and liaison with headquarters.

[26] Environmental intelligence is an emerging concept that does not yet have a consistent definition. Within the context of the Swedish Armed Forces, environmental intelligence is conducted within the framework of medical intelligence, which involves the collection, analysis, interpretation, and dissemination of information related to human and animal health. See Liljedahl et al. (2012).

[27] Increasingly, militaries are considering natural resource issues in planning. For example, NATO's strategic concept provides that "[k]ey environmental and resource constraints, including health risks, climate change, water scarcity and increasing energy needs[,] will further shape the future security environment in areas of concern to NATO and have the potential to significantly affect NATO planning and operations" (NATO 2010b, para. 15).

In the Swedish Armed Forces, environmental analysts participate in the development of medical intelligence reports during the mission planning phase in order to identify, as early as possible, key environmental and natural resource concerns that could affect the receiving nation—and, ultimately, the success of the operation itself. Environmental vulnerability assessments are included in the predeployment medical intelligence assessments because the Swedish Armed Forces regards environmental protection and force health protection as two sides of the same coin (Liljedahl et al. 2012).[28]

To facilitate analysis, information sharing, and integration with geographical information systems, environmental intelligence should be linked to geocoordinates when possible. Although environmental intelligence could potentially be used to establish early-warning systems for environmental and natural resource conflicts, and as a source of information for civilian organizations, security restrictions may limit opportunities to share environmental data and information.

SUSTAINABLE OPERATIONS

Doctrine, environmental awareness, and environmental intelligence are all important, but the ultimate goal is to take what has been learned from previous operations, use it as the basis to develop best practices, and apply the best practices to future operations. This section illustrates how lessons learned can be applied in the field. With ever-increasing pressure on the environment and its resources, sustainability will become key to overall mission success. (See box for two examples of attempts at sustainable development in the Horn of Africa.) The challenge is to balance environmental considerations and mission requirements.

Sustainable development in the Horn of Africa

In regions of Ethiopia and Kenya that are primarily inhabited by Somali pastoralists, the U.S. Combined Joint Task Force–Horn of Africa (which is within the U.S. Department of Defense); the U.S. Department of State; and the U.S. Agency for International Development are engaging in outreach activities, including efforts to promote sustainable development. As part of one such effort, civil affairs units have undertaken a number of water-drilling projects, with mixed results.[a] In one case from Kenya, for example, after a well had been drilled, population growth around the facility led to disputes over whose cattle should be allowed to drink at the well and who should maintain it.[b] At the Gode water-drilling project in the Somali Ogaden region of Ethiopia, in contrast, local residents showed the engineers where to drill and how to avoid conflict among the clans. The lesson from this experience it that it is important to listen to the local population (Burgess 2008).

So far, it appears that in the short term, the construction of wells can help win support from the local population. But in the longer term, the government needs to increase its own capacity to manage water.

[a] In the context of the U.S. military, civil affairs units work with civil authorities and civilian populations to lessen the impact of military operations. In UN peace operations, civil affairs officers are civilian staff members who are often at the forefront of a mission's interaction with local government officials, civil society, and other civilian partners in the international community.

[b] A related risk is that well construction will create a permanent settlement—which can, in turn, create demand for even more infrastructure, such as schools, housing, and health clinics.

[28] Examples are drawn from the Swedish Armed Forces because it is regarded as having the best practices in the environmental area.

UN peacekeeping: Leading by example

With respect to peacekeeping and the environment, the UN has decided, at the highest level, that it should lead by example.[29] As part of this effort, environmental focal points have been designated in all DPKO, DFS, and DPA missions. In 2008, to facilitate implementation, a full-time environmental position was created within the Logistics Support Division of DFS.

To comply with UN environmental policy, DFS, working in partnership with the Swedish government, has undertaken various pilot efforts and studies.[30] For instance, in a collaboration that is based on the DPKO-DFS environmental policy and draft environmental guidelines, Sweden and DFS are addressing environmental protection and force health protection in UN peacekeeping field missions. The overall goal is to develop robust, practical tools that will (1) facilitate the everyday work in different phases of a mission, (2) minimize negative environmental impacts, and (3) and enhance positive environmental impacts. UNMIS was chosen as a testing ground for tools being considered for implementation in current or future missions.[31]

One focus of the collaboration between DFS and the Swedish government has been to facilitate the development of camp infrastructure that will meet sustainability standards but that is small and light enough for rapid deployment and evacuation. In addition, through an ongoing collaboration, DFS, the Swedish government, the United Nations Institute for Training and Research, the International Institute for Sustainable Development, and UNEP are developing a training and awareness program on natural resources, the environment, and peacekeeping (FOI and UNEP 2013a, 2013b, 2013c, 2013d). DFS, UNEP, and FOI are also developing methodologies for undertaking applied environmental assessments. These methodologies have been tested in two field missions: (1) the support bases for UNSOA (the United Nations Support Office for AMISOM [the African Union Mission to Somalia]) in Mombasa, Kenya, and (2) the AMISOM headquarters in Mogadishu, Somalia.

Lessons on water

"Fuel and water are the two most important sustainment commodities on the battlefield. The ultimate weapon, the soldier, runs on water. Everything else runs on fuel" (Scholze et al. 2009, 64). Although the military generally prefers to use potable water (that is, water that is good enough to drink) for all its needs,

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[29] For more information on UN efforts to reduce the impact of peacekeeping operations on the environment, see UNEP (2012).

[30] On assignment from the Swedish Ministry for Foreign Affairs and DFS, FOI is coordinating a collaborative project on environmental and health issues in peacekeeping operations. The Swedish Armed Forces is the primary partner, but the project also includes other civilian and military actors, including the Swedish Civil Contingencies Agency, the Swedish International Development Cooperation Agency, the Folke Bernadotte Academy, and various universities and technology enterprises. Since 2009, UNEP has also been collaborating with DFS and FOI.

[31] The project has continued under the United Nations Mission in the Republic of South Sudan (UNMISS).

sufficient potable water is not always available.[32] And where water is scarce, there might not even be an aquifer large enough to support the additional burden of deployed troops. A number of sending nations, on their own initiative, are using various approaches to water conservation, but there are virtually no requirements for water conservation at the mission level, where the confluence of multiple, complex organizations (military and civilian, governmental and private) not only complicates efforts to evaluate the hydrogeological balance,[33] but also limits opportunities to develop solutions that may be more expensive initially, but that will ultimately conserve water.[34]

In the field, troops can obtain water from two basic sources: surface water (from lakes or streams) or groundwater. In some cases, the receiving nation may be able to supply water for the force. If not, then the sending nation must establish its own water collection, treatment, and distribution system. Either way, the amount of source water available is limited; therefore, water conservation is important.

Water conservation involves two things: limiting the amount of water used and reusing water (that is, taking advantage of waste streams and reusing them instead of disposing of them). Water reuse (or recycling) is generally defined as the use of treated wastewater for beneficial applications that typically exclude human consumption; recycled water may be used for irrigation, for example (see sidebar).

Conserving water in Afghanistan

Camp Zafar, an Afghanistan National Army base located in Herat Province, approximately one hundred kilometers from the Iranian border, is approximately ten kilometers from the nearest working well and more than twenty kilometers from the nearest river or lake. Although water is a scarce commodity that must be trucked in year-round, precious potable water was being used to irrigate the trees and gardens. After analyzing the problem, the United States Army Corps of Engineers (USACE) developed an irrigation system that recycles waste water, allowing the Afghan soldiers to continue to water the trees and flowers, while still providing the troops with ample potable water.

The USACE installed a submersible pump in the compound's effluent pond, along with a feed line to three large water-storage tanks located at the highest point of the facility. Gravity pulls the recycled water from the storage tanks into a network of underground irrigation lines, which disperse the water to irrigation heads that are strategically located near the trees and gardens. Each irrigation head is designed slightly differently, to take advantage of the terrain and to allow gravity to easily move the water where it is needed. It took approximately three months to complete the project; now, with a flick of a switch, the nutrient-rich recycled water flows to the trees and flowers throughout the compound (Wadell 2008).

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[32] In keeping with DFS specifications for camp design, current guidelines for UN peace operations call for five liters of potable water per person per day for personal consumption, and eighty liters per person per day for domestic use, such as ablution, laundry, and food preparation (DFS n.d.). NATO requires at least five liters of potable water per person per day; NATO estimates of water demand for other needs range from seventy to 200 liters per person per day (NATO 2010a).

[33] Such evaluations would be used to ensure, for example, that local water resources are not threatened during dry seasons and that sewage or other effluents do not seep into aquifers.

[34] Water conservation standards that would apply to a theater of operations would have to come from the headquarters organization that is responsible for the operation, such as NATO, the EU, or the UN. But even these entities would have difficulty enforcing standards on various sending nations. To further complicate matters, the headquarters organization would have no control over the nongovernmental organizations, private voluntary organizations, and other governmental organizations that are participating in or contributing to the mission.

Although water reuse does not create new sources of water, it can often satisfy a portion of total water demand. For example, Bangladeshi troops participating in UNMIS were harvesting rainwater. Table 2 summarizes opportunities for water reuse and substitution.

A proper water consumption plan that addresses both water conservation and reuse would accomplish the following objectives:

- Reduce the amount (and therefore the cost) of water that must be transported to theater (Scholze et al. 2009).
- Limit the additional strain that is placed on the water resources of the receiving nation.
- Reduce the volume of wastewater that must be disposed.

Water reuse is dictated by three primary factors: demand, supply, and the protection of human health. Because contaminated raw water and inadequately treated wastewater can create health problems, water reuse is subject to the sending nation's regulations and guidelines governing quality; the nature and extent of the treatment depend on the level of contamination of the source water and the intended use.

Table 2. Uses of reclaimed water

Category of use	*Specific types of use*
Landscape irrigation	Parks, playgrounds, cemeteries, golf courses, roadway rights-of-way, school grounds, greenbelts, residential and other lawns.
Agricultural irrigation	Food crops, fodder crops, fiber crops, seed crops, nurseries, sod farms, silviculture,[a] frost protection.
Nonpotable urban uses[b]	Toilet and urinal flushing, fire protection, air conditioner chiller water, vehicle washing, street cleaning, and decorative fountains.
Impoundments	Ornamental, recreational.
Environmental uses	Stream augmentation, marshes, wetlands, fisheries.
Groundwater recharge	Aquifer storage and recovery, saltwater intrusion control, ground subsidence control.
Potable water supply augmentation (indirect potable reuse)	Groundwater recharge, surface water augmentation.
Industrial uses	Cooling, boiler feed,[c] stack scrubbing,[d] process water.[e]
Miscellaneous	Aquaculture, snowmaking, soil compaction, dust control, equipment washing, livestock watering.

Source: Adapted from AWWA (2009).

Notes: Reclaimed water is water that has been treated and recovered for useful purposes.

a. Silviculture is the science, art, and practice of caring for forests.

b. Nonpotable water is water that may contain objectionable pollution, contamination, minerals, or infective agents, and that is considered unsafe, unpalatable, or both for drinking

c. A boiler is a device for generating steam, which is then used for various heating applications. Feed water consists of varying proportion of recovered condensed water and fresh water.

d. Stack scrubbing involves using sprayed water to clean combustible gas.

e. Process water may be used in manufacturing processes, treatment processes, or manufactured products.

CONCLUSION: THE WAY AHEAD

Post-conflict societies face a number of challenges, including economic recovery and the risk of relapse into conflict. Development aid and policy reforms have been found to be effective in economic recovery (Collier and Hoeffler 2006), and a foreign military presence does appear to help support the establishment of a durable peace: such operations have been shown, for example, to reduce the risk of conflict recurrence by 70 percent (Jones, Gowan, and Sherman 2009). But military operations can also have a significant impact on natural resources and the environment—an issue that is of particular concern in areas where natural resources have historically been a source of tension and conflict.

A number of persistent conflicts have been characterized by a strong link to natural resources or the environment. Whether the conflict derives from abundance or scarcity, both practitioners and scholars increasingly view natural resources as playing a crucial role in fueling and prolonging—and therefore potentially ending and resolving—these conflicts.[35] With the growing recognition of the nexus between natural resources and conflict, it has been suggested that the military increase its involvement in environmental protection and natural resource management; more recently, it has been proposed that the military might be employed in tasks such as monitoring illicit trade in natural resources (UNEP 2009; Global Witness 2010).[36]

The reasoning behind proposals for increasing military involvement in environmental protection and natural resource management is that the military has valuable expertise in the areas of logistics, intelligence, and new technologies (see box on next page). Although such missions, if successful, might increase local support—not only for the military operation, but also for the mission's overall strategic goals—increased military involvement is not without challenges, including the following:

- Military operations may find themselves pursuing ambiguous or ill-defined goals.
- There is a risk of "mission creep," in which responsibilities and tasks expand beyond a mission's original goals.

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[35] Since the early 1970s, researchers have been engaged in an ongoing discourse about the links between conflict and the environment (including the earth's natural resource base); examples include Meadows et al. (1972), Deudney (1990), CNA Corporation (2007), Dabelko (2008), and CNA Military Advisory Board (2014). Other researchers have focused on the environment as means of supporting dialogue and the resolution of conflict; see, for example, Conca and Dabelko (2002) and Ali (2007). Finally, still others have examined the environmental impacts of armed conflicts themselves; see, for example, Austin and Bruch (2000) and Brauer (2009).

[36] For more on this issue, see Mark B. Taylor and Mike Davis, "Taking the Gun out of Extraction: UN Responses to the Role of Natural Resources in Conflicts," in this book.

Leaving a legacy: Afghanistan agribusiness development teams

In Afghanistan, agriculture accounts for approximately one-half of the gross domestic product and employs approximately 80 percent of the population. After years of war, however, many of the country's agricultural practices are inefficient or outdated. In 2007, recognizing the importance of agriculture to the lives of Afghanistan's people, the U.S. Army National Guard, the U.S. Air National Guard, the U.S. Department of Agriculture, and the U.S. Agency for International Development deployed the first Afghanistan agribusiness development teams (AADTs) to Afghanistan, with the goal of helping to revitalize the agriculture sector in the provinces of Ghazni and Nangarhar.

The AADTs were made up of Army and Air National Guard personnel with a range of agricultural expertise (from academic study to having grown up on a farm) and skills (from diesel mechanics to veterinarians). The idea was to find Afghan solutions for Afghan challenges—to bring aid and education to Afghan farmers by working in partnership with the farmers themselves, as well as with community leaders, universities, and the state. The AADT approach was based, in part, on the fact that members of the National Guard are so-called "citizen soldiers"—reservists who do not serve full time in the armed forces but are activated for emergencies or for overseas operations.[a] Through the internet, voice communications, and satellite technology, the AADTs have ready access to agricultural expertise within the United States.

AADT projects include improvements to irrigation systems and training in a number of areas, such as fertilizing, planting, marketing, and crop storage. Because water and energy are scarce, the AADTs are testing sustainable methods for pumping water and are working on overall watershed management, including the capture of rainwater runoff and snowmelt for irrigation; for several projects, solar- or wind-based systems are being used to meet power requirements. But the most important objective is to ensure that the local communities can sustain the projects when the AADT leaves; to help support this goal, the projects generally employ only material that is readily available to the Afghans.

The broader intent of the AADT initiative is to improve security by improving the economy. Because it is more profitable to grow opium than to grow food, opium has become the main cash crop. By establishing agribusiness as an alternative livelihood, the U.S. Department of Defense hopes to decrease interest in poppy cultivation. The partnership is designed to make efficient use of resources and to coordinate effectively with other livelihood support projects in the region (Flynn 2007; Hasson 2008; Kellerhals 2009).[b]

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[a] Because it is sometimes too dangerous or otherwise problematic to deploy civilians in combat zones, military troops are an alternative; in some circumstances, however, it may be preferable to use National Guard members in ways that take advantage of their civilian professions. See, for instance, *International Herald Tribune* (2009).

[b] Personal communication, M. A. Leppert, AADT Coordinator, and M. Allen, public affairs officer, March 27, 2009.

- Military organizations may be taking on roles that are beyond their expertise or capacity; in particular, troops may lack the training and maturity to assist with environmental protection and natural resource management.
- It is inherently difficult to accommodate multiple objectives and tasks and to align political and military objectives in such a way as to ensure operational success.
- There is a risk of securitizing the environment—that is, creating a setting in which military leaders may not be accountable to civil society.[37]

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[37] An understanding that the military ultimately answers to civilian authorities minimizes the risk of securitization. It is important to note, however, that especially in developing countries, where resources are limited, military assistance may be required to increase the capacity of state agencies in areas such as monitoring and enforcing regulations; under these circumstances, securitization is a less sensitive issue (SIPRI 2008).

These concerns highlight, among other things, the need for greater information sharing among the different actors involved in peace operations, and for the creation of a forum in which the role of the military in natural resource management and environmental protection can be discussed. Furthermore, any new crises or conflict areas would benefit from a coordinated strategic environmental assessment, including not only the needs, vulnerability, and resilience of the affected people, society, and geographic region, but the additional aggregated impacts (positive and negative) from the various actors involved.[38]

Peace operations can leave a legacy of opportunities (for example, enhanced infrastructure and improved local capacity for natural resource management) or a legacy of problems (for example, environmental damage, resentment, and mistrust); the outcome depends on how the interaction between the mission and the area of operations is managed. Because civilian-military cooperation is vital to environmental stewardship in post-conflict situations, lines of authority between the military and the civilian administration must be clearly drawn.[39] In democratic societies, the military is subordinate to the civilian government; thus, civilian institutional structures should be in place to exercise control and oversight of military strategic planning, budgets, procurement, and operations. Such structures will ensure that the military's autonomy is regulated. In sum, the role of the military needs to be coordinated with—and dictated by—the overall objectives of the peace operation.

A well-trained, professional military should have the organizational structure and capacity to support civilian environmental protection and natural resource management, but such tasks must not be undertaken at the expense of the military's primary role—which, in peace operations in post-conflict situations, must be defined by civilian political institutions. Nevertheless, within that defined role, the military can still demonstrate environmental stewardship. A sustainable approach to military operations can help determine how the operation is perceived and can help ensure the successful transition to civil authorities.

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[38] Whereas some kinds of environmental assessments, including environmental impact assessments, more often are undertaken for actors operating in conflict and crises areas, strategic environmental assessments (SEAs) are less common. The SEA concept has mainly evolved from the recognition that many sustainability concerns can only be solved by addressing them at the strategic level, long before any project is commenced and a traditional environmental assessment has been initiated. In short, while an environmental assessment (or environmental impact assessment) addresses potential impacts at the project level, an SEA is a systematic process that aims to ensure that sustainability considerations are integrated in policies, plans, or program initiatives (Liljedahl and Waleij 2014).

[39] For further discussion of this issue, see Melanne A. Civic, "An Enabling Framework for Civilian-Military Coordination and Cooperation in Peacebuilding and Natural Resource Management: Challenges and Incremental Progress," in this book.

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