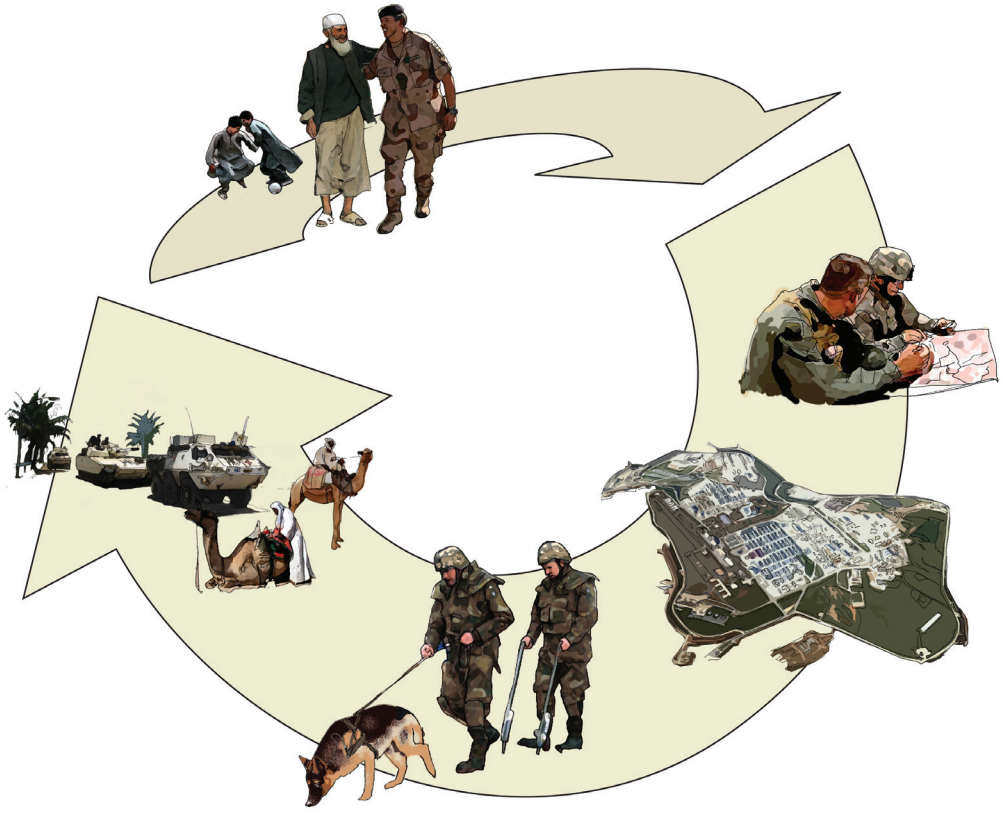
The Gap between Buzz Words and Excellent Performance:

The Environmental Footprint of Military and Civilian Actors in Crises and Conflict Settings

ANNICA WALEIJ AND BIRGITTA LILJEDAHL



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Sammanfattning

I snart 20 år har Totalförsvarets forskningsinstitut (FOI) forskat om de hållbarhetsutmaningar det innebär för civila och militära aktörer att verka i konflikt- och krisområden. En av de erfarenheter som dragits är att det miljömässiga fotavtrycket från såväl den egna verksamheten som de tillfälliga förläggningar, eller samhällen som krävs för verksamheten, kan vara betydande. Inte minst avseende det totala, s.k. kumulativa effekten av flera aktörer som verkar på samma plats över tid. Ett exempel är det totala fotavtrycket avseende vattenförbrukning, när alla aktörer som finns i ett område, inklusive lokalbefolkningen och dess boskap. Om vattenuttaget överstiger det som åter-genereras av underliggande akvifer, kan irreparabla skador på den lokala miljön uppstå. Denna rapport togs ursprungligen fram som ett av resultaten av projektet *Environmental Dimensions of Sustainable Recovery: Learning from Post-Conflict and Disaster Response*, vilket leddes av American University School of International Service och Världsnaturfonden (World Wildlife fund) mellan 2012-2014. Rapporten diskuterar FOI: s erfarenheter från att arbeta med miljöfrågor på såväl strategisk som taktisk nivå, med militära aktörer, FN:s fredsfrämjande och det humanitära samfundet i konflikt- och/eller krisområden. Den diskuterar några av de verktyg för att förutse och hantera miljöpåverkan som finns tillgängliga och lämnar föreslag på hur informationsflödet mellan de olika aktörer som finns över tiden i ett insatsområde skulle kunna förbättras.

Nyckelord: miljökonsekvens, hållbarhet, tillfälliga samhällen, militär, civil, fredsfrämjande, insatspersonal, humanitära samfundet, FN, konflikt, kris, policy, bedömning, verktyg

Summary

The Swedish Defence Research Agency (FOI) has addressed challenges related to environmental impact and sustainability of temporary communities such as the military, peacekeepers, or humanitarians in conflict and disaster areas in approximately 20 years. Experience has shown that the environmental legacy of these communities, regardless of purpose and type, may be significant, especially regarding the cumulative (or aggregate) impact. For instance, the total water footprint of all the actors present in an area, together with the local population, may exceed an aquifer's natural recharge rate, causing irreparable damage to the local environment. Direct, second- or third-order impacts are counter to resilience-building efforts and hampers positive development in the affected region. The report was originally produced as a paper within the project *Environmental Dimensions of Sustainable Recovery: Learning from Post-Conflict and Disaster Response*, led by the American University´s School of International Service and World Wildlife Fund, 2012-2014. It presents the result discusses FOI's experiences with environmental issues at both the policy level and the tactical level, with and within the military community, UN peacekeeping and the humanitarian community operating in conflict and/or crises areas. It discusses some available tools to predict and manage environmental impact and suggests ways to achieve a greater flow of information among the different actors present over time in an area of operation.

Key Words:
Environmental impact, Sustainability, Temporary communities, Military, Peacekeepers, Humanitarian community, Conflict, disaster, Policy, Assessment, Tools, Crises

Acknowledgements

This report was originally produced as a paper within the project Environmental Dimensions of Sustainable Recovery: Learning from Post-Conflict and Disaster Response, led by the American University´s School of International Service and World Wildlife Fund (WWF).[1]

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[1] See also https://edspace.american.edu/greentools/ and https://www.newsecuritybeat.org/2014/07/environmental-dimensions-sustainable-recovery-learning-post-conflict-disaster-response/

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1 Introduction

Crises, including complex emergencies, war, and natural disaster, create high-stakes choices for environmental governance and natural resource management. If managed properly, natural resources and environmental protection are key elements for disaster risk reduction and recovery of sustainable livelihoods. But if managed poorly, the result can be greater vulnerability to both conflict and disaster.

To better understand these choices and help key actors prepare for them, American University WWF have formed a collaborative initiative on Sustainable Recovery. Supported by The United States Institute for Peace and American University's School of International Service, the Sustainable Recovery project brought together organizations and individuals active in the fields of humanitarian response, environmental protection, natural resource management, peacebuilding, and conflict transformation. By pooling each group's knowledge and experience, the idea was to better identify better practices and barriers to implementing them.

The project has produced several products of use for the community of practitioners active in post-conflict and post-disaster settings:

- A consortium of individuals and organizations willing to share knowledge and learn from each other's experiences, launched by a series of workshops held at American University;
- A white paper and policy brief summarizing key lessons learned;
- A searchable database of relevant toolkits, including training courses, guidance notes, handbooks, and standards used for environmental management, conflict sensitivity, and humanitarian response in post-conflict and post-disaster response;
- A series of experiential case studies from lead organizations in the fields of environmental protection, humanitarian action, conflict transformation and peacebuilding, reflecting on lessons learned, existing challenges to better practices, and needed innovations.

This report elaborates on one of the cases/ paper mentioned above.

1.1 Objective

The objective of this report is to present some of the environmental challenges and experiences that civilian and military humanitarian response encounters in

crises and conflict settings. Environmental considerations are often seen as a burden on already strained resources for such operations, without any clear benefits to the mission.[2] By describing different experiences with case studies, the authors has aimed to contribute to spreading broader understanding of important environmental obstacles in these settings and to propose solutions and guidance toward better practices.

In addition, the paper draws upon the experiences of The Swedish Defence Research Agency (FOI), which has worked on understanding these issues for more than a decade.

2 The past and present work of FOI

FOI is Northern Europe's largest research institute in the defence and security sector. For almost 20 years FOI has addressed environmental issues for defence-related activities. The approach initially was rather reactive and driven mostly by legal requirements.[3] Early research focused on the environmental consequences of the Swedish Armed Forces (SwAF) surplus munitions disposal.[4] However, over time the defense environmental field has evolved in character to have a more proactive approach trying to foresee potential environmental issues in advance so as to be able to prevent and/or mitigate negative effects on troop health, mission success, the environment, or the ability to deliver on the mandate.[5] With increasing attention to peace support and crisis management operations, the need for support in addressing environmental issues in

[2] Waleij et al 2011, Mosher et al 2008, Barrett et al 2007; UNEP OCHA JEU, 2014

[3] The starting point for the FOI research on sustainable security was in 1994, when the Swedish Defence Material Administration commenced FOI to conduct a literature study on environmental risks associated with energetic materials, and the Swedish Work Environment Authority awarded FOI a research grant concerning the toxicity of mineral fibres from maintenance work of the Viggen fighter aircraft. In light of the produced results, the importance of funding for applied research in the defence environmental field was acknowledged.

[4] After the Second World War significant amounts of surplus ammunition and explosives existed in Sweden and at that time there were no restrictions concerning such materials. Therefore, several tons of surplus explosives and ammunitions were disposed of in lakes, the Baltic Sea and in mine shafts. By the mid 1990's a research program was initiated at FOI by commission of the. Initially much focus was on defence installations such as military shooting ranges, airfields and defence industry facilities all over .FOI was also commissioned to perform several international investigations during this period, for example in the Baltic States and Russia.

[5] For instance, the UNSC resolution *S/RES/2100(2013) on the establishment of MINUSMA,* OP32. Requests the 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 them, as appropriate and in accordance with applicable and relevant General Assembly resolutions and United Nations rules and regulations, and to operate mindfully in the vicinity of cultural and historical sites

operational planning and during deployments has also evolved.[6] Consequently, the need has expanded for environmental policies, environmental assessment methodologies and environmental management systems that are adapted for conflict and disaster settings. Since 2004, FOI has been increasingly involved in projects aiming to develop environmental policy and doctrine as well as awareness and training programs for military, peacekeeping and civilian humanitarian international operations (Figure 1). This development has been driven partly by policy requirements and partly by evidence-based research.[7,8]

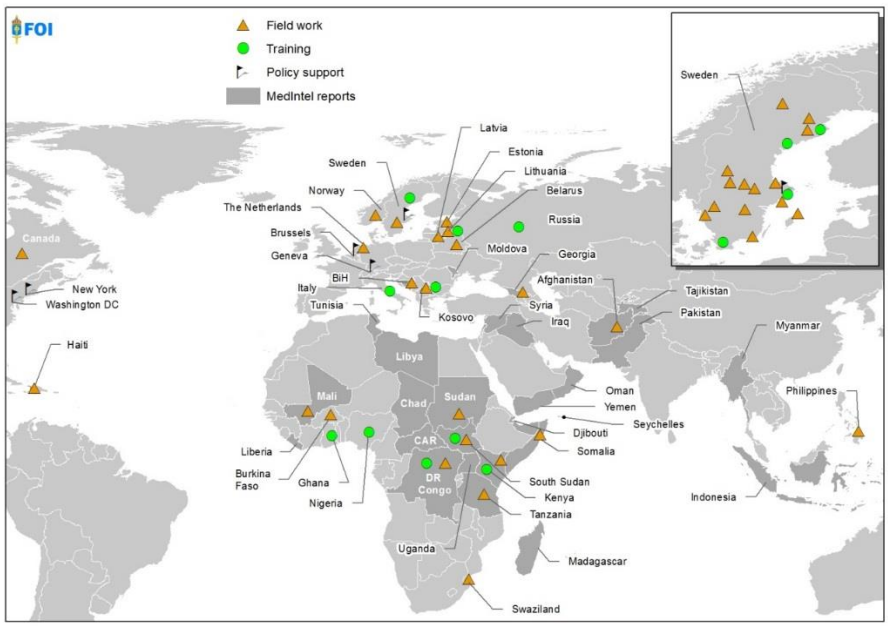

Figure 1. Locations where FOI has worked on environmental considerations and identified lessons to be learned. Picture credit: Per Wikström

[6] Since 1948 UN has launched 64 peace operations and in addition, the number of peace operations launched by non UN actors including NATO, EU and the African Union has doubled in the past decade. Since 2000 global peacekeeping deployments have grown by 30 %. Since 1948, Sweden has contributed to almost 50 UN field mission. As of April 30 2014 a total of 601 Swedish military, civilian and police personnel was deployed.

[7] Waleij et al 2011, Martinsson et al 2010a, Martinsson et al 2010b.

[8] For instance, in 2003 NATO issued its first Environmental Policy for NATO-led military activities. This constituted for the first time an external demand and pressure on troop contributing countries to address environmental issues in NATO-led military operations, triggering follow up actions in NATO member states and partner nations. During this period, the Kosovo conflict and subsequent NATO intervention lead to FOI studies on environmental impacts of conflict and the need for environmental considerations in military operations

The demand for sustainable operations, in particular when operations are located in fragile and/or remote areas, is rapidly growing. Sustainability in this context refers to the capacity and capability to sustain the mission as well as environmental, social and economic sustainability. This growing emphasis is driven by multiple concerns: i) preserving health and saving lives and livelihoods; ii) minimizing the unintended environmental and socioeconomic footprint during conflict and disaster situations, reducing costs, and avoiding litigation.[9] By not integrating environmental considerations into routine operations, long-term impacts causing environmental, livelihood, health and even security concerns have occurred and will continue.[10]

FOI support has mainly been given to SwAF but also to customers such as the Swedish Ministry for Foreign Affairs, the United Nations Environment Programme and UN peacekeeping operations (UNDPKO/DFS). The Swedish Civil Contingencies Agency (MSB) has also requested environmental experts through commissions or secondements to support their international operations. Although a wealth of tools and guidance exists developed for civilian peacetime activities, these tools are not necessarily adapted adequately to a conflict and disaster context. A major reason for this is the unique and often extreme set of conditions encountered in these settings. First, there may be a lack of applicable environmental legislation and the institutional capacity of the receiving nation may be low. Second, the security situation may not allow for peacetime tools to be used, in part because there may be safety issues. Third, there may be time constraints and logistical challenges to get to remote locations. Fourth, there may be language barriers or challenges involving the general public, and in particular women and girls, in a participatory process. Finally, the social structures in such settings may have normalized practices such as corruption and dodgy way of doing business. Such challenges are not limited to environmental work but apply also to other areas such as education and public health.

[9] Cravioto et al 2011, US DoD (2010); Waleij et al 2011b

[10] Environmental issues have become increasingly connected to security issues in the military. For instance, resupply of fuel and drinking water for troops deployed in contingency operations cost human lives. Therefore, the US Army has conducted a "casualty factor" for fuel and water resupply, which for the US Operation Enduring Freedom (OEF) in Afghanistan was calculated to be 0.042; that is, one soldier or civilian killed or wounded for every 24 fuel-related resupply convoys. The figure for water was 0.029 (e.g. one casualty for every 34 resupply convoys of potable water) USAEPI (2009). A similar situation, where fuel and other resupply convoys are targeted by insurgents has also been observed in complex peace operations e.g. the NATO ISAF mission in Afghanistan. During June to September 2010 more than 145 civilian support staff was involved in attacks on NATO convoys and 123 vehicles were destroyed McGirk (2009). Conserving water and energy (fuel) therefore is not merely an environmental issue. Another example is the Cholera outbreak in Haiti, allegedly caused by UN peacekeeping (Liljedahl et al 2012b, see also page 19). In Walej et al 2011a an elaboration on the interrelation between environmental considerations, health issues and mission security is given.

FOI therefore has focused on the need for method development within conflict and disaster contexts, where pre-deployment actions include Environmental Policy and Doctrine support[11], Environmental Intelligence[12] (e.g., Strategic Foresight and Environmental Vulnerability Assessments (EVA),[13] Environmental Assessments (EA) (e.g.; Environmental Impact Assessment (EIA))[14], Environmental Baseline Studies (EBS)[15], Strategic Environmental Assessments (SEA)[16], and Environmental Training and Awareness.[17]

Whereas the content and structure of the assessment tools are much the same as for a civilian peacetime context, the time frames are much tighter to deliver the right information to the right function. Late information will simply be disregarded. The focus on environmental intelligence and pre-deployment planning is a result of lessons learned. It has been recognized that failures in implementing environmental considerations often are grounded in the planning process, with information gaps on the environmental aspects of the conflict/disaster resulting in a lack of allocation of resources (monetary and/or human). Examples of estimated time frames for the various environmental considerations are summarized in Table 1 and Figure 2.

[11] FOI has for instance supported the Swedish Armed Forces and the Swedish Ministry of Defence to draft to first Environmental Concept for EU-led Military Operations, provides expert support to UN DFS on the implementation of the UN Environmental Policy for UN Field Missions and provided support to the development of several NATO Allied Joint Environmental Protection Publications.

[12] Environmental intelligence is considered to be a subset of Medical Intelligence which is defined as a ”product of collection, evaluation, analysis, interpretation and dissemination of foreign medical, epidemiological, bioscientific, environmental or other information related to human and animal health” (NATO STANAG 2547/AJMedP-3). It is an “all source intelligence”; that is, it incorporate all sources of information, including, most frequently, human resources intelligence, imagery intelligence, measurement and signature intelligence, signals intelligence, and open source data, in the production of finished intelligence.

[13] Environmental intelligence including Environmental Vulnerability Assessments (EVAs) are produced within the framework of Swedish Armed Forces Medical Intelligence. EVAs exist for a number of countries and regions, for instance Mali, C.A.R. South Sudan, Kenya, Afghanistan, Syria, Darfur (Sudan), Chad, Somalia, and Djibouti. See also Liljedahl et al (2012a)

[14] Liljedahl et al 2013 a, b

[15] Liljedahl et al 2013 c, d

[16] Liljedahl. & Waleij, (2014), Liljedahl et al 2014,

[17] FOI was for instance commissioned by UNEP, the International Institute for Sustainable Development (IISD) and the UN Institute for Training and Research (UNITAR) to develop a series of pre-deployment pilot training modules on peacekeeping and natural resources. The first pilot training was held at UNEP Headquarters in Nairobi in November 2010 for environmental focal points representing 16 field missions. Joint DFS/UNEP/FOI environmental awareness trainings have also been conducted in December 2009 for military and civilian personnel from MONUSCO and FOI and UNMISS have performed awareness trainings in South Sudan

Table 1. Examples of estimated time frames for the various environmental considerations to be taken.

Step in the life cycle	Environmental considerations to be taken	Time Frame
Step 1	Environmental Intelligence (initial Environmental Vulnerability Assessments (EVA) for a specific region	1 day - 1 month, strategic foresight, continuous
Step 2	Environmental Assessments (EA), e.g.; Strategic Environmental Assessments, (SEA) addressing positive and negative impact from, a planned mission on a strategic level	Initial screening: 3 hours - 1 week Full assessement: 1 month
	Environmental Impact Assessment (EIA) addressing impact on a project level (Environ mental Baseline Study (EBS)	1 month, ideally cross-walked with the Environmental Baseline Study (EBS) 1-2 weeks
Step 3	Environmental Training and Awareness	Hours to days
Step 4	Environmental management plan	Whole mission
Step 5	Down-sizing, liquidation and cleanup	Weeks to years
Step 6	Lessons learned	Mission specific, weeks to months

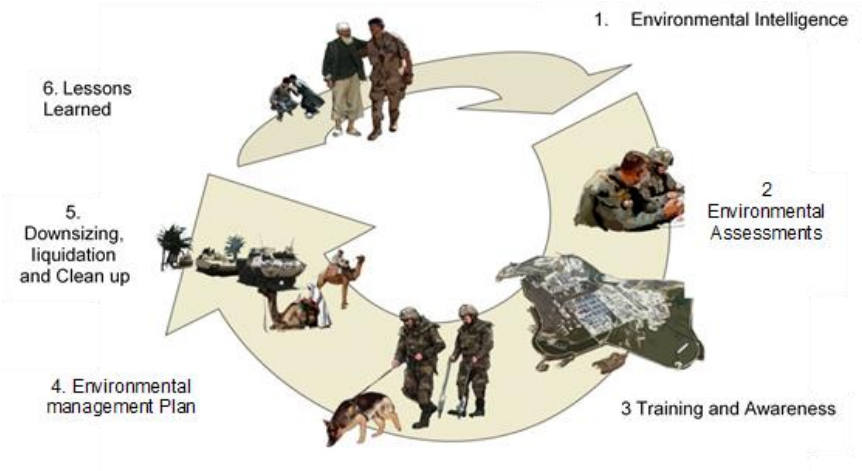

Figure 2. Life Cycle Approach to operations where various environmental considerations each play a role in Strategic Environmental Assessment (SEA). Picture credit: Hans Lundholm.

3 Case studies

This section presents three case studies that aims at embracing the various environmental challenges encountered by military, peacekeeping and humanitarian organizations alike.

3.1 NATO intervention in Afghanistan

Environmental degradation in the form of soil degradation, air and water pollution, deforestation, overgrazing, and desertification greatly impact Afghanistan‘s social and economic sectors and are underlying factors of the protracted crises. A majority of the population depend on forests for firewood and revenue from pistachios and almonds, which grow in natural woodlands in the country’s Central and Northern regions. Deforestation occurs at an alarming rate, while denser forests are prone to illegal timber harvesting by timber barons. As forest cover decreases, the land becomes less productive, threatening the livelihood of the rural population. Loss of vegetation also creates a higher risk of floods, which cause displacement, loss of property, soil erosion, and a decrease in the amount of arable land. Thus, deforestation links to several elements of the

"conflict trap,"[18] as poverty stresses the coping mechanisms of the local population, underscoring the importance of addressing these types of post-conflict ecological footprints.

The NATO ISAF (North Atlantic Treaty Organization International Security Assistance Force) mission has been present in Afghanistan since 2003 and is basically deployed to assist the government of Afghanistan to establish a secure and stable environment for the Afghan people.[19,20] A stable environment would include sustainable management of natural resources, since this is an essential component for long-term sustainability in a nation where over 80 percent of Afghans live in rural areas and rely on natural resources for their livelihood.[21] To ignore the importance of the environment for ISAF operations would therefore have been to jeopardize success and development of the military mission (and to foment the conflict trap).[22] More than 50 different nations have participated in the ISAF mission, with total military strength peaking at about 132,000 troops in June 2011. The potential impact of sustaining so many people--in a country with almost no internal capacity to meet even its own needs, and in a rapidly changing security situation-is challenging. Every single person, including military personnel, military contractors and support agencies, requires logistic support such as transportation, energy, food shelter, water and waste disposal services.[23]

This aggravating dimension to a conflict setting can further be exemplified by the successive extension of international Camp Marmal, in the Northern Province Balkh, one of several military compounds in northern Afghanistan. Camp Marmal is a €120 million installation that today stretches somewhat over two square kilometers in size. In the absence of proper and coordinated environmental assessments, roads may be constructed in a way that increases an unsustainable resource extraction and/ or causes erosion, or an increase in water extraction may exceed the surrounding groundwater re-generation capacity. The mere size of camp Marmal, together with its neighbors, risks overstretching the nearby ecological system, but also makes the camp itself a vulnerable point of attack.[24]

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[18] Hegre et al, 2011, 'The Conflict Trap'.

[19] ISAF was created with the Bonn Agreement of December 2001 (officially the Agreement on Provisional Arrangements in Afghanistan Pending the Re-Establishment of Permanent Government Institutions) was the initial series of agreements intended to re-create the State of Afghanistan following the U.S. invasion of Afghanistan in response to the September 11, 2001, terrorist attacks at the World trade Center, NYC.

[20] COM ISAF (Morning Standup 26 Apr 11) encouraged partnership with National Environmental Protection Agency (NEPA) validated importance of EP to counter-insurgency (COIN) operations concerned with burn pits

[21] UNEP, 2003

[22] Hegre et al, 2011

[23] To add to these numbers are, also the numerous humanitarian assistance and development agencies and the United Nations Assistance Mission in Afghanistan (UNAMA).

[24] San Miguel, 2012

In the year of 2014, the Swedish Armed Forces down-sized and redeployed personnel from Northern Afghanistan, creating many challenges such as the disposal of hazardous waste, including anti-freeze, lead batteries, surplus ammunition, waste oil and oil filters. Often, either for security reasons or because many nations aim to comply with national environmental legislation, the only practical disposal option involves expensive and complicated arrangements to transport the waste back to the nation where the hazardous substances originated. This effort could be significantly decreased in future operations if a sustainable and holistic mindset is mainstreamed in the operations from the start of the planning phase. This, however, demands that the operation is approached from a life-cycle perspective. To address this challenge, attempts to model the ideal camp have been initiated.[25]

3.2 The humanitarian crises in Haiti

Environmental degradation, deforestation, soil erosion, a sensitive coastline, climatic risks, and natural disasters are considered the immediate causes of vulnerability for the affected people in Haiti. Insufficient attention to environmental considerations can trigger significant degradations and secondary impacts for populations and decrease resilience. For example, where environmental standards for latrines and building materials have not been adhered to, there have been consequences for the local population and for the quality of the humanitarian response.[26,27] Despite attempts from several organizations to highlight the environmental challenges for the upcoming crisis response efforts, there were few mechanisms to mainstream this knowledge into the execution of the response (military as well as civilian). Despite several good

[25] In 2007 FOI, the Swedish Armed Forces (SwAF) and the United Nations Department of Peacekeeping Operations (UNDPKO) organized a workshop which sought to design an ideal base camp from scratch, with an emphasis on mission capacity, force protection and sustainability. To manage the complex relationships that occur during camp establishments an ability to manage and store several different types of models in one single system is needed. Therefore, the Camp Authoring Tool (CAT) has been developed. The tool works as a platform where experts from different fields can work together in order to understand the different conditions and challenges in the planning, operation and decommissioning of a camp. The idea is to develop strategic guides for future camp designs, while remaining free from any of the current constraints imposed by the UN, NATO or EU concerning camp structure and operational requirement. The design is constantly iterated, with input sought from various subject matter experts from the military, peacekeeping, humanitarian, and scientific and civil engineering communities. The Camp Authoring Tool (CAT) is used as a platform for camp planning (Waleij & Hedström, 2014)

[26] Abrahams, 2014

[27] In the IASC real time evaluation, where in the case of the massive international response in the aftermath of the January 2010 earthquake in Haiti it was clearly stated that insufficient attention to environmental considerations can trigger significant degradations and secondary impacts for populations as well as decrease resilience. IASC, Cluster Approach Evaluation 2, Haiti, 2010, p.28

attempts, it can be concluded that only a fragment of the thousands of civilian and military response actions included environmental considerations and/or coordination,[28] and only a few environmental impact assessments (EIA) were undertaken despite the extremely environmentally sensitive region.[29] As a consequence, even though some organizations made efforts to address issues such as deforestation, soil erosion, and solid and liquid waste management directly, the unintended consequences of other response actions directly or indirectly contradicted these efforts. One such example is the October 2010 outbreak of cholera, which was clearly introduced from sources outside Haiti. The peacekeeping mission MINUSTAH (United Nations Stabilisation Mission in Haiti) has been widely accused of being the source of contamination, although it remains theoretically possible that the vector for the disease was introduced by some other intervening organization.[30,31]

Accumulated shortcomings, including problems with water supply, sanitation, and public health infrastructure, led to the magnitude of the cholera outbreak. It has also been recognized that even if a deploying organization has an environmental policy in effect, there is often a large gap between the general strategic level and practical implementation at the tactical level. Environmental considerations are often seen as a burden on already strained resources, without any clear benefits to the mission or to organizational goals.[32] Although the significance of environmental issues is gaining ground within deploying organizations, the environmental situation in the area of operation is often perceived to be so dire that the environmental impact of the deployed organizations is thought not to add significantly to the situation, and can thus be disregarded.

3.3 UN Peacekeeping in East Africa

Environmental issues are historically one of the drivers of the conflicts in East Africa including South Sudan, Somalia and Kenya. For instance, inter-communal violence over natural resources such as water, grazing areas and cattle occur between agriculturalists and pastoralists, with large-scale land-lease deals (so-

[28] Personal communication, Andrew Morton, UNEP Haiti Office, 2011
[29] Ibid
[30] Cravioto et al 2011
[31] Liljedahl et al 2012b
[32] Waleij et al 2011a

called “land grab”) likely to exacerbate already existing food and water shortages in the region.[33,34,35]

The current conflict and humanitarian crises in South Sudan accentuate resource depletion due to increasing and unsustainable land use (e.g., for charcoal production) resulting from population increase, displacements and resettlements. Refugees bring their own humanitarian dynamics within the host communities and other areas which require development and humanitarian actions. The large number of refugees hosted in the region for nearly two decades has been perceived as a great burden on the host communities, in particular with regards to depleting resources and environmental degradation.[36,37] In addition, in June 2014 75,000 internally displaced people resided within four UN Peacekeeping Compounds in Juba, Bor, Bentiu and Malakal and a cholera outbreak expanding, adds significant new challenges to UNMISS (United Nations Peacekeeping mission in South Sudan) and the humanitarian community, respectively.[38] In Somalia, clashes due to resource competition occur in all zones.[39] In addition, the issue of a wealth sharing agreement between North and South Sudan for oil revenues will be paramount for reaching a durable peace.[40] In Kenya there is growing concern over vulnerability in densely populated urban slums and the potential for environmental disasters.[41]

UN peacekeeping forces deployed to this region face a number of challenges both logistically and with respect to their health and the environment. Although personnel working in UN field missions often are aware of the need to address environmental issues, lack of policy, guidance and resources have made it difficult for missions to take practical action. Recent developments such as establishing a policy for environment in UN peacekeeping field missions have created a starting point for individual missions to operationalize environmental considerations.[42]

UNMISS and the UN Support Mission to the African Union Mission in Somalia have addressed some environmental issues by issuing environmental assessments, introducing environmental managements systems, conducting

[33] Badiey, 2013, Deng 2011
[34] For instance, inter-communal violence over natural resources occurr among e.g. Bul Nuer - Luac Jang Dinka, Balanda – Dinka, Bor Dinka – Murle, Dinka Gok - Dinka Rek and Lou Nuer – Murle in South Sudan, see UCDP, 2014, UNOCHA, 2013 and UNOCHA, 2012
[35] Deng 2011
[36] UNEP/OCHA (JEU), 2012
[37] UNHCR, 2014
[38] UNOCHA, 2014
[39] UNOCHA, 2011, page 43,
[40] Patey. 2012
[41] UNOCHA, 2012, page 50
[42] United Nations DPKO/DFS, 2009, due for revision early 2016

environmental awareness trainings, and deploying pollution-reducing and resource-conserving technical equipment such as waste water treatment devices and solar water pumps. Sweden has contributed to this effort by providing environmental expertise as well as developing concepts for environmental assessments, environmental awareness trainings, energy and water conservation technologies, and improved waste management practices.[43] Current financing for peacekeeping and humanitarian action can, however, be counter to sustainable development, because it encourages short-term returns on investments and temporary solutions. Mission mandates, for instance, rarely exceeds one year and can be even shorter. The UN also has no standing army or police force, and Member States are asked to contribute the personnel and strategic resources required for each operation. Given the often underfinanced missions, investments in sanitatiary solutions, solar panels and fuel-efficient stoves that require a higher initial investment are often not considered, even though they are more environmentally sustainable and may be economically beneficial in the medium to long term. [44,45] Comparative data from a number of UN peacekeeping operations, however, found that the capital investment for energy efficiency could be recovered in one to five years and more calculations of return on investments might help to change the reluctance to consider these options.[46,47]

4 Identifying the principal barriers

This section discusses some of the principle barriers encountered in policy and practice (e.g. field work and deployments), for integrating environmental considerations in operations.

4.1 There are complex interrelations between environment, security, development and health that cannot be ignored

If foreign troops (or humanitarians, for that matter) are, or are perceived to be, causing pollution or overusing natural resources this may have implications for security and force health protection, as illustrated by the case of the cholera

[43] Sweden has through FOI and SwAF supported UNDPKO/DFS with environmental expertise to facilitate implementation of the UNDPKO/DFS Environmental Policy for UN field Missions. The work has been funded by the Swedish Ministry for Foreign Affairs

[44] UNEP/UNDFS/UNSOA, 2010

[45] UNEP, 2012

[46] Liljedahl et al 2009, see also UNEP 2012, page 29.

[47] There may however be operational constraints from a military perspective to wind power solutions, such as interference with radar equipment.

outbreak on Haiti. The distrust following this episode ended in deadly riots, in addition to all the lost lives and human suffering from the cholera itself. Another example associated with force health protection, legal and financial implications is the "burn pit issue" experienced by the US Army and its allies in Iraq and Afghanistan,[48] A third example that accentuates the nexus between force protection, environment and security in operations is the situation with charcoal use in AMISOM, the African Union (AU) Mission in Somalia, which was revealed by the Environmental Impact Assessment.[49] The UN provides modern stoves to avoid charcoal use, due to the environmental consequences caused by charcoal manufacturing. In addition, in this region charcoal is a conflict resource, very often illegally exploited. The AU troops, however, have preferred to buy charcoal locally in Mogadishu since cooking with charcoal stoves is their traditional procedure and buying local charcoal is seen to provide a certain level of force protection. Security procedures and a desire to support local development in insecure environments have also occasionally led to the local production or procurement of bricks. These practices, although intended to promote local business, may result in excessive water mining and deforestation, as seen in Darfur, Sudan. In Afghanistan, local bricks procured by NATO were manufactured by child laborers, which creates an ethical dilemma as well.[50]

4.2 There are many misperceptions about what "environment" means

For a long time the perception of the environment as being only about "the bugs and the bunnies" prevailed in the military community and environmental issues were not aligned with the military mission.[51] Similarly, in the humanitarian community saving life and reduce human suffering are at the core of humanitarian business,[52] which at times is perceived as counter to environmental considerations. This tension can be seen in the humanitarian response process. The *Inter-Agency Standing Committee* (IASC)[53] cluster system allows several

[48] Postlewaite, 2011
[49] Liljedahl et al, 2013a
[50] UNEP 2007, Kamber, 2011
[51] A milestone in changing this perception was the 2007 CNA report on the security implications of climate change, at articulating the concept of climate change acting as a "threat multiplier" for instability in some of the most volatile regions of the world (CNA 2007).The thoughts of the report has recently been elaborated in CNA 2014, that states that climate change not only acts as a threat multiplier but also that it accelerates conflict (CNA 2014)
[52] In humanitarian action the primacy of the humanitarian imperative is paramount, that is**:** that action should be taken to prevent or alleviate human suffering arising out of disaster or conflict, and that nothing should override this principle.
[53] IASC is the primary mechanism for inter-agency coordination of humanitarian assistance

humanitarian agencies to appeal together for funds for the same crisis, through the consolidated appeals process (CAP). The CAP provides a snapshot of the humanitarian situation and identifies who does what and where.[54]

Environment was one of the original so-called "cross cutting issues" that should be taken into account in humanitarian action, including the CAP process. However, although many ad hoc initiatives have been undertaken, as well as a recent surge in UN and partner activities coordinated through the Joint Environment Unit (JEU) of the UN Environment Programme (UNEP) and the UN Office for the Coordination of Humanitarian Affairs (UN OCHA), no clear definition or guidance on how to operationalize environmental considerations exists.

Common themes in the CAPs are that environmental issues can be a driver of conflict and/or crises and that the environment is important for coping strategies of the local population. In fact, all of the CAPs in 2012 (20 in total) recognized environmental issues (including land disputes, water scarcity, and climate change) as a contributor to the current crisis in one way or another. One example that was highlighted was that an inadequate humanitarian response to the issue of land disputes and natural resource management could worsen the humanitarian situation and indirectly revive new tensions.[55] Yet, only about half of the 2012 CAPs acknowledged environment as a cross-cutting issue, either in the project selection/ prioritization or in a separate cross-cutting issues section, which quite clearly illustrates the "perception problem".[56] In 2014 JEU issued a report on possible ways ahead for enhancing the issues.[57, 58] In addition it has performed field studies in Haiti, Afghanistan and Nepal during 2015.

[54] CAP was created in 1991 by General Assembly resolution 46/182 as a fund-raising mechanism and an improved coordination tool for humanitarian action. The CAPs focus on close cooperation among donors, non-governmental organizations (NGOs), the International Red Cross and Red Crescent Movement, the International Organization for Migration (IOM), United Nations agencies and host governments. For FAQs on the CAP and the CAP process, see http://www.unocha.org/cap/about-the-cap/faqs#t57n1605

[55] UNOCHA 2012, page 17

[56] Waleij, 2012

[57] For instance an Environment in Humanitarian Action Network has been launched, an e-learning module on Environment in Humanitarian Action have been developed (available at www.eecentre.org) and environmental field advisors (EFA) has been deployed to selected missions.

[58] UNEP OCHA (JEU), 2014

4.3 Off-setting environmental issues at the operative level is easier if other topics are leveraged

In the military and peacekeeping communities mission enablers, the capabilities, forces, and resources that contribute to the success of a military operation, are important. In certain situations, environmental considerations--or at least actions that are not counter to environmental protection and resource efficiency--may be such enablers[59]. In order to better understand the drivers and challenges of integrating environmental considerations, in 2011 the Swedish Armed Forces commissioned FOI to conduct a survey of the principal drivers for including or excluding environmental considerations in peace operations.[60] Subject-matter experts from ten nations, as well as the European Union NATO and the UN, participated in the survey. Overall, legal compliance was the strongest inducement for including environmental considerations in the planning and execution of operations (ranked first by 26 percent of the respondents). The second most common drivers were force health protection and financial/logistical issues (19 percent each), followed by gaining trust and credibility with the local population (public relations/winning "hearts and minds") at 14 percent. Eight percent of respondents identified security considerations as the most important consideration, and six percent cited common sense (see Figure 3).

[59] Reid, 2012

[60] For the purpose of this paper, peace operations refer to the term *peace operation* refers to peace support, peace enforcement, peacekeeping, and peacebuilding

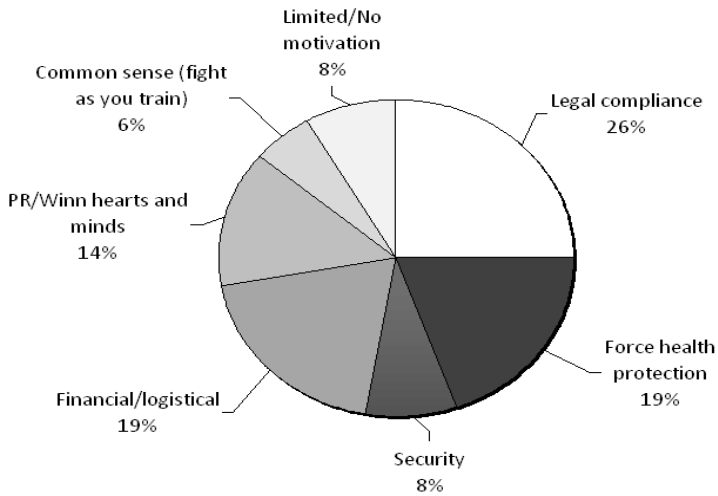

Figure 3. The chart illustrates the motivation for environmental considerations in the planning and execution of complex peace operations. The percentage in the diagram refers to the share of total respondents (n = 19).[61]

These results suggest that multiple incentives may exist. They also showed, however, that there were large differences between nations, and also between activities being performed domestically and those performed in theatre. Troop-contributing nations often state that the more stringent standard between national and host-nation environmental laws shall apply to the extent possible. "To the extent possible" is, however, a relative concept, as environmental considerations are always subordinated to operational demands, and therefore have a lower priority in most cases.[62] The mindset amongst planners was stated to be the largest challenge for operationalizing environmental consideration by one-third of the survey respondents, closely followed by resource constraints. Among resource constraints, the lack of environmental professionals during planning was stated to be one large constraint, and lack of time, another. Lack of information, including both environmental information from the theatre and conflict analysis, was identified as yet another challenge.

[61] Waleij et al 2011
[62] Ibid

4.4 Nobody is accountable for the cumulative environmental footprint

In addition to the actions of individual actors, there is also the challenge of addressing the aggregate or cumulative environmental footprint caused by multiple actors operating simultaneously in the same theatre of operations--for instance, when refugees, local populations, humanitarian agencies and peacekeepers are all situated in or near the same location. Cumulative effects may place a potentially unsustainable strain in often fragile environments with scarce natural resources.[63] Not all areas, however, are at equal risk from a cumulative footprint. To identify where such a situation may occur, one must look in more detail at activities that unify operations and those with more unique features. Some examples are seen in Table 2.

Table 2: Likelihood of environmentally harmful activities occurrence in different types of camp settings

Type of activity and risk	Military/ peacekeeping camps	Humanitarian camps	IDP/ refugee camps
Explosion risk - ammunition storage	√	-	-
Livestock keeping - Overgrazing	-	-	√
Risk of oil spills from workshops, wash racks or POL stations	√	√	-
Impact on local water resources from on-site water abstraction	√	√	√
Ground and surface water contamination from septic systems and on-site infiltration of sewage	√	√	√
GHG (greenhouse gas emmisions) from e.g. diesel generators and aviation	√	√	-

As seen in the table, water extraction was identified as an issue that impacts all actors, with the potential to be a cumulative problem if all is extracted on-site. Even if no single civilian and/or military deployment exceeds a sustainable level of water extraction, the joint pressure from the deployed actors and the local

[63] The cumulative impact, that is impacts which are caused from one or several separate events, but together magnify each other, of many actors present in an area at the same time, as well as over time, may be much greater than each individual impact seen in isolation

community (including domestic animals) on the hydrological resources in a specific area may exceed the critical point of renewable capacity, causing irreparable damage to the local environment and countering resilience building efforts for the local community.

Environmental intelligence may play an important role in identifying the key environmental bottlenecks in the very early phase of an operation. Such intelligence, which in this case includes hydrogeological assessments and monitoring of water extraction, makes it possible to ensure that the relevant budget, material, training and awareness are adequate for addressing management of water scarcity. Although hydrogeological and hydrological surveys and test drilling of wells are being conducted more frequently, the efforts to date are mainly focused on ensuring water capacity and quality for the camps themselves. Less effort is made to ensure that new wells and water extraction do not impact the water quantity or quality in existing or planned local wells. Such measures are being critical, especially in semi-arid and arid developing regions, but are rarely undertaken in practice.[64] FOI therefore has conducted a survey on the interpretation of surface features that can assist in the evaluation of groundwater resources in semi-arid and arid developing regions, where the lack of infrastructure may place serious constraints on borehole drilling, which in turn limits the data that can be obtained directly from the subsurface.[65]

Moreover, the long-term security aspect demands that there be cross-sectoral, long-term dialogue between stakeholders. For example, in the case of a new well, this is necessary to prevent water that may be provided freely is traded later for money or sexual services, or used as a means for pollution or warfare (‘dry-the-enemy-out’).

This type of situation as described above may seem fictional. However, this is in fact the situation in some of the areas where peacekeepers, humanitarians, refugees and internally displaced persons are competing for the same scarce water resource, causing friction with the host communities. Planning assumptions and water consumption rates for military and peacekeeping staff are significantly higher than for refugees and internally displaced persons, yet the latter may outnumber the deployed personnel by orders of magnitude, such that the sum of the water extractions may be far too large for the aquifer to recover. Effective planning from the earliest stages of a mission’s inception and effective, equitable resource-conserving procurement policies, have the potential to reduce substantially a field mission’s water footprint. The issue must be addressed in a systematic manner, in partnerships across existing structures and organizational or sectoral ‘stovepipes.’

[64] Waleij et al 2013
[65] Lewis and Liljedahl 2010

4.5 The extension of coordination cannot be over-emphasized

"Comprehensive approach", "whole of government approach" and "interoperability" are buzz words that are promoted by most actors. In real life, however, very little effective coordination takes place. Although there are different definitions of the concept of a comprehensive approach, the term implies a higher degree of integration, coordination and cooperation amongst the many actors, and types of actors, involved.[66] Within a national perspective, the term is associated with expressions such as "whole of government approaches" or "interdepartmental cooperation", while multinational or regional organisations speak of "multidimensional" and "multifunctional" practices. Experience shows that in multinational and multifunctional operations, general information as well as mission-specific information regarding environmental aspects tends to be shared only sparsely and, even less often, systematically. As a result, individual nations and military and civilian actors may, in the best case, conduct environmental assessments without coordination or data sharing. Attempts to increase information sharing are currently being made within the international military community as well as within civilian deployments. For instance, an Environment in Humanitarian Action (EHA) Network has been created, coordinated by UNOCHA[67], and a community of practice for greening field operations has been stood up.[68] However, substantial work in the field remains.

Why is it so difficult to achieve results on the ground? As discussed previously, constraints that are often highlighted are time, budget, and human resource, and furthermore a lack of priority of actions. However, there are some more deeply rooted mechanisms that are less frequently discussed. One is linked to the system of funding. Most actors work under a mission statement that regulates mandates and field of operations. Sometimes the mandate on the ground does not fully match the needs. From a coordination point of view, this might mean that an actor's resources may be needed for purposes other than planned (or even not needed at all), while other fields experience a lack of support. The need to produce results in the field and report back a successful mission to ensure future funding may become an unintended obstacle. This impacts both the possibility

[66] Hull & Derblom 2011

[67] EHA is informal advocacy group, established in April 2013, which jointly identifies key issues involved in integrating environment; prioritizes joint actions for advocacy and capacity building on environmental emergencies. The reference group meets every two months, shares progress and challenges and prepares actions to better integrate EHA. Presently, the reference group members are UNEP, UNHCR, UNDP/BCPR, WWF, ICRC, Groupe URD, Interaction, ProAct Network, MSB, FOI and JEU. https://www.humanitarianresponse.info/themes/environment

[68] Greening humanitarians is a partnership betwen FOI, UNEP OCHA JEU, American University, Proact Network, Environmental Law Institute and WWF, see http://greenhumanitarians.com/

for efficient coordination and the problem of a lack of "true" reporting on failures. The need for improved methods, models and operations also hampers the implementation of actual improvements.

One such example is provided by water and sanitation (WASH) interventions, which frequently fail (although the results are not necessarily reported as such). Water projects in Darfur (Sudan) have been found to create aid dependency with little focus on durable solutions. Long-term funding to ensure maintenance of WASH systems is seldom the case, and the level of community involvement is sparse, at best. Examples where toilets are left unused because the affected communities did not realize they were built for them are all too common. [69]

Another reality that is often mentioned but less often addressed is that most people favour coordination but no one wants to be coordinated, especially if the outcome of coordination might have negative implications for the perceived success of the planned activity. One of the key questions are how to encourage actors to focus on the joint problem at hand rather than just the success of their own operations, and whether the funding mechanisms will reward a coordinated action even if individual organizations may lose momentum in the process? Also linked to the issue of funding and incentives is the often (but not always) deeply rooted tradition of reporting 'excellent performance'. Whereas this might be crucial for securing future funding (and/or positions) it may severely hamper the success of results on the ground. If donors' mechanisms were interested in increasingly reward the reporting of 'failed performance', if what it means to fail were clarified, this would actually increase the quality of field missions over time.

What would it take, then, to engage in deeper coordination and sharing in the face of these potential risks of less favorable positions regarding future funding and careers? The overarching answer would be trust: trust that the coordinating system over time would indeed pose the best solution for the joint problem at hand, and trust that letting go of one's own perceived control of the situation would secure future organizational and individual positions rather than undermining them. At a human level, trust is built by individuals who are secure enough in their own role and position to be able to interact without regarding others as a competitor or a threat.

[69] James, 2013

4.6 The paradox of assistance

The preceding examples highlight not only the need for environmental intelligence and coordination in mission planning, but also the importance of continuous update of environmental concerns and changes in the whole mission cycle. The tools developed or amended (SEA, EVA, EIA, CAT etc.), can be seen as products of a lesson-learned process that can be related directly to the complexity that becomes visual when many organizations and nations contribute to aid or military missions. An area of operation is known to expand, as the humanitarian crisis augments, and when it does, the complexity of making strategic assessments and taking strategic decisions become evident. It is this cumulative presence of military, peacekeepers and humanitarians that constitute the 'paradox' for the aim of the international community in conflict and crisis settings. In other words, the paradox is constituted by the fact that the intention of effective, cooperative and coordinated assistance can in fact become ineffective, counterproductive (short- or long-term) or encumbering.

Technology such as the Camp Authoring Tool (CAT) can in this perspective be useful to facilitate long-term planning and the strategic component to environmental assessments (SEA), as it can be used by many organizations, preventively. However, it is the joint achievement of a cooperative and coordinated attempt by the international community and its human capital which must organize and seek solutions for these matters. In this aspect the challenges discussed above must be addressed, to ensure a joint platform with common goals, a lessons-learned process including a better balance between honesty of failures and best practices, and trust already before deployment to a crisis or conflict area.

An example of an activity that aimed to achieve a step forward towards increasing information sharing with various actors was a participatory workshop on improving best practices in crises and conflict contexts regarding the social and environmental performance of military and civilian actors operating in the same area. The workshop was part of Sweden's individual partnership plan with NATO and took place in October 2014 in Stockholm, Sweden.[70] Another example is an activity jointly performed by FOI, MSB and SwAF together with the Pacific Institute/Global Compact COE Water mandate, at the World water week in Stockholm, in August 2015.[71]

[70] Waleij et al 2016

[71] See http://programme.worldwaterweek.org/event/5118

5 Conclusions and finding the way ahead

Peace operations and humanitarian action play a fundamental role in stabilizing conflict-affected regions and preparing the ground for sustainable development. Inevitably, however, their presence has environmental impacts on surrounding communities. Sweden, like many nations, has decided to more closely link foreign, development, security, and defence policies together in these efforts. As a result, the prospects of contributing to peace, security, democracy and development in the world are assumed to improve. Experience shows, however, that unless the environment and sustainable approaches are taken into account when excuting these high ambitions, failure is all too likely.

The most difficult current challenges of operationalizing a light environmental footprint in post-conflict/disaster settings include changing the mind sets of decision makers, senior management and donors about what “the environment” is, how it is affected by peace operations and humanitarian action, how it affects actors in the field, and what constitutes a sustainable mission. This is where innovation and organizational learning are most required.

Other key barriers to implementing more sustainable missions include the need for a better understanding of the complex interrelations between environment, health, security and development; , identification of different drivers, and potential for increased leverage, identification of who is accountable for the cumulative footprint; and, last but not least, the never-ending challenge of coordination, in which trust is a key component.

There are steps that may be taken to adress the challenges and move in a positive direction. First is the use of of a mission life-cycle approach (Figure 2) and systematic implementation of the corresponding environmental tools previously discussed. Second, to address the problem of accountability for the cumulated footprint from multiple stakeholders on a strategic level in crisis and conflict situations, and to better consider the fragility of areas and the affected people, a more coherent international approach to including environmental considerations is required. In this respect, a multi-stakeholder approach to conducting strategic environmental assessments is needed. Although a SEA cannot be as detailed and ´scientific´ as a peacetime SEA/EIA process, the methodology can be used to establish the framework for resource allocation (e.g., budgeting, human resources/tasking) and priorities, enabling more successful and sustainable operations.

Third, at the operational level, new tools such as the Camp Authoring Tool are emerging as technical byproducts of the recognition that some lessons have been learned. Such tools make a contribution to a proposed way forward and can be

related to the complexity that colors a conflict or a catastrophe. Strategic decisions are hard to make, and they can arguably become harder to make if the complexity of working in a conflict setting is overlooked. This is why tools for strategic planning can be useful and help to plan parts of future or ongoing international operations. They also strengthen recognition of the need for coordination and cooperation.

Despite clear progress in the field, substantial work remain before we can truly talk about sustainable support from the international community (civilian or military) in crises or conflict situations, in which long-term sustainability on the ground in the affected area is prioritized over short-term ‘success-stories’ for the stakeholders themselves. From this aspect, a better understanding of the true challenges on the ground and the long-term impact of short-term solutions must be presented to military and civilian decisions makers, including donors. This will enable more flexible solutions that might have a financial repayment of investment that reaches beyond the specific budget allocated for each separate action or mission.

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