

1. LESSONS FROM IMPACT ASSESSMENTS IN CRISES RESPONSE

2. ABSTRACT

The past 15 years the Swedish Defence Research Agency (FOI) and partners has performed environmental assessments (Environmental Impact Assessments, EIA environmental risk assessments, ERA and Environmental Vulnerability Assessments, EVA) and health threat assessment in support of national as well as international crises response operations. Products include desk top studies, field studies and remediation plans.

Geographical areas include as diverse environments as Russia, Aceh (Indonesia), Haiti, Burma, the Philippines, Afghanistan, Horn of Africa and Sudan. The paper will cover some of the experiences gained and some thoughts on the way ahead. Assessing impacts in crises affected areas, with lacking infrastructural support and little time poses challenges for achieving scientifically valid results. The paper will discuss some Swedish experiences achieved so far.

3. INTRODUCTION

FOI has for 15 years time been working with environmental assessments concerning defence related activities such as ERA of potential contamination at e.g. shooting ranges, air fields and defence industry facilities^{1,2}. Health and environmental threats are often closely interrelated and therefore it is in our view important to address both aspects in parallel.

The work within the field of environmental assessments within e.g. the Swedish Armed Forces operations has evolved from being rather reactive in character - hence dealing with issues once they have appeared - to have a more proactive approach trying to foresee potential environmental issues in advance. This approach may be somewhat difficult when it comes to conflicts and natural disasters; but precautions can be taken to some extent and negative environmental impacts mitigated. It is for instance possible to make some basic preparations when it comes to e.g. data collection making it possible to speed up the assessment process once needed.

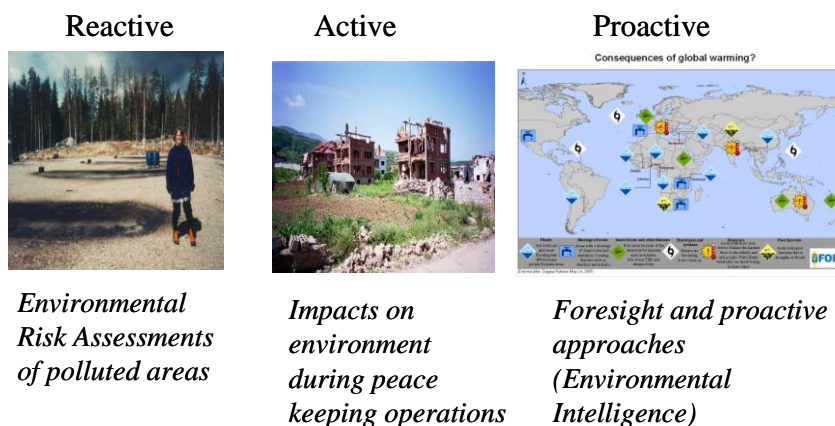


Figure 1. Different approaches to environmental assessments; reactive - to work with assessments of past events; active - to do assessments for ongoing activities, and; pro-active - to foresee and plan ahead of crises and incidents.

ERA and EIA in crises or conflict areas are associated with many very special challenges, for instance when it comes to access to the geographical area. There are rarely the same opportunities to thoroughly visit an area as in a typical case. Security issues and time constraints may for instance result in a very limited access to an area, making the desk study and the preparations prior to the visit ever so important.

4. SCOPE

The article will give some examples on environmental assessments that have been conducted the last 15 years at Swedish Defence Research Agency (FOI), ranging from reactive to more proactive approaches. The article will not in detail describe the methods used, but merely show a spectrum of different assessments and the challenges involved, such as physical characteristics, time constraints and security aspects.

5. EA IN CRISES RESPONSE - SOME EXAMPLES

Peace operations or training activities at home station installations have in many aspects the same environmental issues to be dealt with; e.g. waste management, handling of oil and petroleum spills and energy consumption. To what degree these issues may hamper the situation and cause negative effects, are amongst others a matter of preventive actions taken and context - what is the situation like at the site, geology, climate, infrastructure etc. In the case of peace operations, the conflict in it self can have had serious environmental impacts^{3,4,5,6}. In the later phases of a conflict, where peace enforcing or peace keeping troops are deployed to the area, environmental consideration must be a natural part of the planning and performance of the operation in order to avoid hampering the situation even^{7,8}.

Natural disasters have devastating effects on human lives and settlements and the early stages are mainly struggles for saving as many lives as possible. However, in the aftermaths of the disaster other effects are often revealed such as; contamination of food and water, damaged industrial facilities resulting in leakages of hazardous materials, destroyed dams and power plants etc. Infrastructural functions like for instance waste management collapses causing a threat for both human health and environment and a possible risk for contamination of e.g. water assets. This is addressed for instance by UNEP OCHA (Hazard Identification Tool), the Swedish Civil Contingencies Agency and AGEE (Advisory Group of Environmental Emergencies).

5.1 Reactive

Since 1996, FOI has specialized on military polluted areas with projects not only in Sweden but in also Georgia, Ukraine, Estonia, Latvia and Lithuania.⁹

Environmental accident in Russia

Ostrov-3 is a closed military town in Russia and the home of “Military Unit 26022”, a nuclear missile base. In 1985 there was an enormous spill of heating oil, due to overfilling of a storage tank connected to the boiler house supplying the town with heating and hot water. About 100 tons of oil was spilled and the main part was left on the ground. FOI was commissioned to perform an ERA and a clean up plan for the site. Geological and hydro geological investigations were conducted in order to investigate the extent of the pollutant, but also the future, potential spreading of the oil to the groundwater^{10,11,12}.

Ämari

The demilitarization after the end of the cold war has resulted in a large number of military facilities and training areas, now available for civilian use. The environmental considerations are several e.g. the assessment of pollution from military specific compounds. When released from military contracts, the former military airbase Ämari, in Estonia, was proposed to be a civilian airport for the capital. FOI was commissioned to perform an ERA and propose a remediation plan.

Using filed sampling and analysis in combination with groundwater modeling (Figure 2) a base for actions was received, where not only acute but potential long term effects on three groundwater aquifers in the area was received. With his background information, different

scenarios for clean up could be evaluated quickly, and cost benefit analysis for various types of clean up performed¹³.

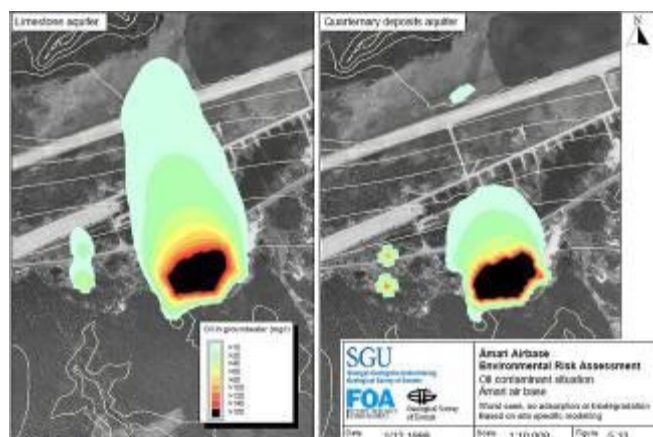


Figure 2. Dispersion model of ground water contaminations at Ämari airfield. (to be added)

5.2 Active

Environmental health threat assessment for Ache province

Following the tsunami in December 2004, FOI in 2005 performed a pre-deployment environmental health threat assessment for the Ache province. The aim was to indicate necessary force health protection for personnel to be deployed to the area. A thorough review was made regarding for instance, industrial facilities and the possible leakage and spreading of chemicals to the surroundings and the potential health risks associated to this¹⁴.

Environmental Assessments in Natural disasters

In the case of the Burma study - or more recently the Haiti study - the aim is to with a very short notice, identify and describe the most probable acute and long-term environmental risks¹⁵. The aim is to facilitate for deploying troops to include the environmental management in all aspects of their mission. Even if the assessments are primarily developed for military deployments, the results from the assessments can also be utilized by civilian emergency response e.g. Swedish Civil Contingencies Agency, OCHA or UNEP. Information sharing is a critical in order to continuously update or validate the findings.

Technological disaster in the Philippines

On June 21 in 2008 the ferry Princess of the Stars sank in the sea in the Romblon province, the Philippines, carrying app. 800 passengers and a significant load of hazardous materials such as pesticides and oil products. A joint EU-UN Environmental Emergency Assessment Team was composed and sent to the site, where FOI contributed with expertise in the field of ecotoxicology and pesticides.

The assessment team was to conduct a general assessment of the environmental and humanitarian concerns due to the potential risks from a leakage of the hazardous material. The risk assessment performed by the team included; a site investigation; background studies on the chemicals on board and the marine environment at the site. The chemical's behaviour in water in correlation to the vulnerability of the sea life served as a foundation for the risk assessment and recommendations for future actions¹⁶.

5.3 Proactive

Environmental Vulnerability Analyses (EVA)

Intelligence about the environment in an area of operation (AOR) is important to inform early decision making and mission planning in order to avoid unintended negative impacts on the

receiving nation's environment including its natural resources. Furthermore, it may create opportunities to strengthen local natural resources management. In the Swedish Armed Forces the assessment of environmental vulnerabilities in an area of operation currently is included in pre-deployment medical intelligence assessments. An EVA is produced in the early mission planning, with the aim to highlight as early as possible key environmental concerns and natural resources vulnerabilities. In order to facilitate further analysis and information sharing of the environmental information geographical information system (GIS) is used (Figure 3).^{17,18,19}

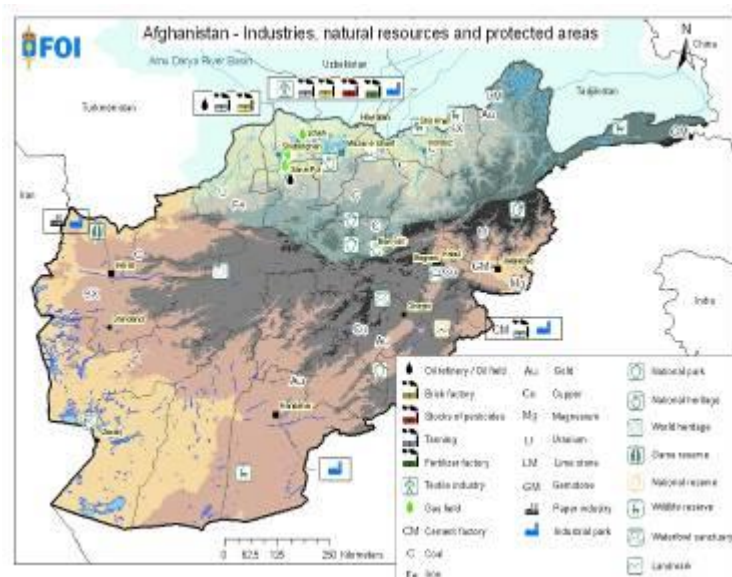


Figure 3. Map showing natural resources (e.g. minerals and water sources) cultural and natural sensitive areas in Afghanistan.

“Combat EIA”

In Juba in southern Sudan collaboration between UNDPKO/DFS UNMIS and Sweden is ongoing on sustainable solutions for peacekeeping missions. One task is to perform an EIA for a new camp for UNMIS outside Juba. This is the first time an EIA is made for a UN camp in a peace building context. Environmental aspects like water and energy consumption, natural resources as well as socioeconomically impacts on the society from a new camp are considered. One of the challenges in this case is how to secure the possibilities for the local population and the public to get information and have their say in the process. The lack of available data in conflict areas also makes the EIA-process more difficult to perform.

6. LESSONS LEARNED

Some lessons learned are summarized below:

- **Time constraints** - Time is crucial during the initial phase after an accident or disaster. It is not the time and the place to provide a full and complete picture of the situation but merely on identifying the major risks and impacts and help rescue personnel to act accordingly.
- **Critical decisions** - Accidents or natural disasters involve critical decisions in the emergency response phase, but also on in a longer term and may often concern people's possibilities to access food or water and to support for themselves and their families. For instance in the case of the Philippines, a decision was immediately taken to ban all fishing in the area where the ferry sank. The risk assessment provided later on the decision makers with the necessary input to be able to cancel the ban. For Ostrov-3 in Russia the assessments based on groundwater modelling has been an important tool for the decisions whether to close adjacent wells or not.
- **Quality and access to data** - Assessments in crises and conflict areas are often associated with a very limited access to environmental - and other - data. Desk studies must be

complemented by field visits in order to increase the quality of the assessments, but security factors or other limitations are a challenge.

- **Coordination** - Coordination is key to minimize environmental impacts as well as being able to capture opportunities is the cooperation between actors operating in the crises area.

7. DISCUSSION AND CONCLUSION

We must always strive to enhance the quality of the assessments within the time frame given in each case. What methods can be used and improved in order to make the assessments under e.g. very limited time? How can we ensure accessibility to data? By using for instance GIS as a tool for sharing but also the analysis and presentation of results, we have among other things experienced a platform for faster communication, something that e.g. OCHA for a long time has been working with in disaster or conflict areas.

Cooperation between local authorities, troop contributing countries and/or NGO's is of great importance. Sharing of data - during the first phases of emergency response work as well as in the preventive/proactive work - will substantially enhance the possibilities of making quick and accurate assessments as well as save time, money and effort for all involved by avoiding double or overlapping work in critical situations.

A crises situation or conflict sets all normal prerequisites for traditional ERAs aside. Making the assessments in these situations means doing your very best with little information. Time constraints, limited data access and/or restricted field access due to security reasons make the process of composing an accurate assessment ever so challenging. A lot has been done in the field of environmental assessments in critical situations by devoted NGO's, researchers and expert on a national level or within e.g. the UN system. There is however room for improvements and for instance by finding ways for data sharing or communication, ERA can be performed better and faster - providing the important support needed.

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