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**NATO-CCMS ACHIEVEMENTS IN DEFENCE-RELATED
ENVIRONMENTAL STUDIES
1980-2001**

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INTRODUCTION

NATO-CCMS entered the field of Environmental Security studies long before this descriptive term was introduced into NATO terminology in the 1990s. At the start of the 1980s there was no existing framework within which international bodies could discuss the interface between defence and the environment. NATO's Defence Ministries had no environmental policies or programmes and only a few staff responsible for environmental protection. However, CCMS tentatively and fortuitously discovered routes by which the military could start to examine its relationship with the natural environment. The first of these routes were to study aircraft noise abatement and environmental conservation. Two CCMS seminars were held in Soesterberg (NL); the first in November 1982 on the topic of aircraft noise abatement, the second in November 1984 to discuss aspects of the preservation of flora and fauna in military training areas.

From this quiet start NATO-CCMS has developed an influential programme of defence related environmental studies and conferences that has surpassed the expectations those involved in its early development. The CCMS Pilot Studies on defence related issues have provided NATO with a vehicle for scrutiny of its own actions, but more than that, they have been a highly successful means of building relationships within NACC/EAPC and the Partnership for Peace programme. The efforts within the CCMS framework have undoubtedly provided a catalyst for the setting up of many national, bi-lateral and multinational initiatives for defence related environmental study and action. For example, few people in 1989 would have imagined that the Romanian Ministry of Defence would have an environmental protection office within ten years, or that the NATO School (SHAPE) would be offering courses in the environmental management of military bases by 1995. The story of this programme is an interesting one and an object lesson in the way by which a small but significant programme can achieve leverage well beyond normal expectations.

Transformation in attitudes

There has been a real transformation in the position and practices across NATO and the Partner Countries. In a complete reversal of the situation twenty years ago, all the military authorities of NATO and most of those in Partner countries are subject to the full range of environmental legislation, with only occasional procedural exemptions. Public attitudes have changed to such an extent that they now expect the military to be sensitive to environmental issues.

The pilot studies and conferences exhibit a pattern of development that has shown how the growth of ideas has expanded. The early pilot studies and conferences from 1984-1991 were essentially "NATO only" **First Phase**, with the emphasis on attempts to understand the range of impacts the military had on the environment and on the creation of broad objectives and plans. This led to a **Second Phase**, 1991-1997, and the adoption of an agenda where specific issues of interest were studied, such as the ***Pilot Study on the Re-use of Former Military Lands***. This was the period during

which the nations of the former Warsaw Pact were welcomed as study partners. The most recent **Third Phase**, 1997-2000, has shown a further maturity as issues are confronted on an operational and policy-making front. Environmental Security is now matter-of-fact business for NATO and its partners and the current thrust is to impart best practice within a framework set by the civil world, providing a strong contrast to the military imperatives of the 1980s. The recent ***Pilot Study on Environmental Management Systems in the Military Sector*** illustrates the way CCMS is now supporting professional environmental developments. It is now assumed that NATO nations will adopt environmental management methodologies such as the International Standard ISO 14001 for Environmental Management Systems, which until recently were more common in industrial enterprises than in defence. CCMS has helped NATO make enormous strides in environmental affairs. However, at the turn of the millennium NATO's Scientific and Environmental Affairs Division should be encouraged to look more closely at this little programme. The challenges CCMS now faces are more over organisation and budget than science and professionalism. It is now time to reward the efforts of the 20th Century with a greater acknowledgement of the place of Environmental Security in international affairs.

THE FIRST PHASE - EARLY PILOT STUDIES ON DEFENCE RELATED ENVIRONMENTAL ISSUES

Responses to civilian concerns

Aircraft Noise in a Modern Society (May 1985 – Nov 1989) was the first defence-related pilot study initiated by NATO-CCMS. The pilot nations were Germany and the USA. The co-directors were both individuals who went on to have significant impact within Environmental Security at the international scale; Mr Gary Vest (at that time a Deputy Assistant Secretary of the US Air Force), and Dr Heinz Gummlich (German Federal Ministry of the Environment). The study was prompted by the desire of allied nations to grapple with the increasingly difficult problem of military aircraft noise. Combat readiness flying, frequently at low altitude, is necessary in peacetime if the credibility of the defence effort is to be maintained. However there were, and still are, few peacetime military activities that prompt more adverse public reaction. This was particularly acute in Germany in the 1980s, because of the volume of military training air movements. There had previously been a ***CCMS Seminar on Aircraft Noise Abatement*** in Soesterberg, Netherlands, in November 1982 which paved the way for this study. The membership was drawn from across NATO, with from participants from Belgium, Canada, West Germany, Denmark, Italy, Netherlands, Norway, Portugal, Spain, UK and the USA.

The pilot study worked by establishing three sub-groups, ***Source Technology*** (possibilities for reducing noise at the source considering both engines and airframes), ***Receiver Technology*** (possibilities for reducing the nuisance on the ground) and ***Operations and Information*** (airspace management, education, public information). The ***Source Technology Subgroup*** considered noise sources in terms of propulsive noise, rotor/rotorcraft, airframe and sonic boom noise and recommended that member nations incorporate "design for noise" into all future engine and aircraft types. The ***Receiver Technology Subgroup*** considered noise effects, particularly on humans, concluding that although aircraft noise was disturbing and disruptive there was little evidence of physical harm to humans or animals, or well-constructed buildings. It discussed the need for land-use planning and compared national approaches to planning, noise exposure and noise modelling indices. The ***Operations and***

Information Subgroup studied the main causes of noise in flying and current mitigating procedures and concluded that there were few further restrictions possible, without the risk of inadequate training for military missions. The Subgroup reviewed airspace usage to see if more could be done to alleviate demands on limited airspace, particularly with computerised airspace management systems.

The Pilot Study held a total of ten meetings, with more than this achieved by the sub-groups. It organised two **International Conferences on Aircraft Noise**, at Mittenwald (Germany) 22-24 September 1986 and at Williamsburg (Virginia, USA) 25-29 April 1988) and produced reports in the CCMS series and other material for circulation. The Final Report suggested that although the work of the Pilot Study had been completed, the establishment of a follow-up group would allow their activities to continue. The follow-up group would maintain close links with the NATO's **Advisory Group for Aerospace Research and Development (AGARD)** to encourage co-ordinated activities and avoid duplication of effort. It is AGARD's task to foster and improve the interchange of information relating to aerospace research and development between the NATO nations. The **Aircraft Noise in a Modern Society Follow Up Pilot Study** has been running since 1990 with Pilot Nations of USA and Canada. NATO owes a debt of gratitude to the committed co-directors of this pilot study, Mr Gary Vest (USA) and Mr Tony Downs (Canada), both influential figures in defence-related environment studies who retired in 2001.

The Pilot Study on Environmental Awareness in the Armed Forces (1987-1990) was of note because it focussed on a range of concerns and interests about the impact of ground forces on the environment. The pilot study was directed from Germany where there were many worries about environmental degradation as a result of the presence of armed forces. Issues of deep concern to the civil authorities and independent pressure groups included the conservation of natural and cultural heritage sites, potentially polluting materials and the apparent lack of emission controls. At that time there was an impression that the military were lagging behind in a desire to contribute to environmental protection. From the military standpoint there were worries that environmental issues were in danger of adversely impacting upon NATO's ability to train to achieve its defence mission.

The pilot study achieved much in a short time. It produced an **Environmental Principles Statement** in 1990 that eventually led to the adoption of the **NATO Environmental Policy Statement for the Armed Forces** in 1993. A questionnaire approach was used to gain a better understanding of the status of environmental policies and goals, training programs, incentive programs and public information initiatives in the NATO countries. The Norwegian delegation investigated the nature of specific environmentally related problems resulting from military activities in an attempt to categorise their nature. The pilot study had a collaborative venture in that it produced a video aimed at encouraging environmental awareness amongst NATO soldiers and it saw the production of a pamphlet on guidelines for staffs responsible for the planning of military manoeuvres. A presentation on the work of the pilot study was made to the **Euro-NATO Training Group** that supported the guidelines. This was a seed that eventually led to the establishment of the **NATO Training Group's Environmental Training Working Group** some years later in June 1995. In its final report the pilot study proposed that each NATO member nation should establish an organisational structure within their armed forces to incorporate environmental considerations effectively into policy development, planning and the conduct of military activities. Today it is estimated that some there are upwards of 5,000 professional staff working in

NATO and the partner countries military organisations whose main business is environmental protection or sustainable defence land management.

Montreal Protocol

One of the events that took place under the general aegis of NATO-CCMS during this period must be singled out for particular comment. This was the first ***Conference on the Role of the Military in Implementing the Montreal Protocol*** that took place in Williamsburg, Virginia USA in September 1991. CCMS provided the vehicle for NATO to take the initiative over this important international agreement aimed at reducing the threat to the Ozone layer. Experts attended this meeting from the NATO countries of USA, UK, Canada, Norway, Germany and the Netherlands, and by invitation from Austria, Russia and Japan. This must have been one of the first opportunities for non-NATO countries to join in a defence related environmental forum and a foretaste of the considerable interest this topic raised in military circles around the world. The published proceedings covered many aspects of Ozone layer protection, including early work into the replacement of CFCs and other Ozone depleting substances. The proceedings were so popular that they had to be reprinted. This widening of interest provided CCMS with a foretaste of the exciting developments that co-operation with former Warsaw Pact nations would produce as a result of the establishment of the ***North Atlantic Co-operation Council (NACC)*** after the Rome Summit of 1991.

THE SECOND PHASE – BUILDING TRUST BETWEEN NATO AND NACC/EAPC

The second phase of CCMS defence related environmental work focussed on specific issues of mutual concern and coincided with the establishment and development of the NACC/EAPC/PfP structures for mutual support and understanding. The response within NATO and NACC to CCMS promotion of this field of interest was overwhelming. The established pilot study groups received a fresh impetus as new ideas and interests flooded in. The phase was formally launched with a CCMS ***Seminar on the Military Role in Environmental Protection*** in Brussels in November 1992. In addition to attendees from the NATO National Delegations and International Staff over seventy NATO experts attended from fourteen NATO nations and sixteen partners from eleven NACC nations. After an address by the Deputy Secretary General the audience received reports from Pilot Study directors and updates on the promotion of environmental compliance in the armed forces, site assessment and remediation and pollution prevention.

New Initiatives across NATO

The first pilot study to include NACC members was re-named the ***Pilot Study on Defence Environmental Expectations*** in 1992 and co-directed by the USA and UK. The study had started in November 1990 under the title ***National Environmental Expectations and Requirements in NATO Countries*** and held three meetings before taking the innovative action of inviting CEE countries to attend their fourth meeting. This coincided with the re-naming noted above to be more appropriate in the new circumstances. Representatives from Czechoslovakia, Russia and the Ukraine were the first NACC participants. They were later joined by delegations from Estonia, Latvia, Lithuania, Poland and Romania. This initiative, in the spirit of the Rome Summit of 1991, predated the official launch of the ***NACC Work Plan for Dialogue, Partnership and Co-operation*** in December 1993.

This pilot study had already achieved important goals before this new development, particularly over collaboration with **other NATO agencies**. Concerns over with the cost implications of environmental compliance led to a request from the **NATO Infrastructure Committee** on approaches to determining costs for NATO projects. Guidelines were prepared and approved as NATO documents AC/4-N/169 and 173 in February 1992. The pilot study also agreed to assist the **NATO Economic Committee** to develop approaches to investigating the economic costs associated with the implementation of environmental programmes. A joint seminar was proposed with an agenda covering topics such as the defence environmental economic appraisal. The **Seminar on Defence, Environment and Economics** was held at NATO Headquarters on 28 January 1994 with a range of presentations concerning environmental considerations in large government programmes and the challenges of cleaning up military land. The pilot study also had discussions with the Director of the **NATO Maintenance and Supply Agency (NAMSA)** over the issue of environmentally responsible methods of disposal of ammunition. Concerns related to the transportation, storage, demilitarisation and the certification of environmental protection of enormous stocks of surplus ammunition, mines and bombs. However, NAMSA did not pursue this subject further with the pilot study. In contrast, as a result of discussions between the pilot study co-chairs and the Head of the **NATO Defence Research Group**, a **Mid-term Scientific Study on Environmental Issues** was established to investigate contamination issues, site restoration, pollution prevention, environmental conservation and environmental training (AC/243/MTSS of 22 Dec 92 refers).

Growth of NATO-NACC Co-operation

However, the first major collaborative event between NATO and NACC came with the CCMS **Conference on Environmentally Sound Life Cycle Planning of Military Facilities and Training Areas** in Dombas, Norway in September 1992. This was sponsored jointly by the Royal Norwegian MOD and the MOD of the Czech and Slovak Republic and held as part of the pilot study on **Defence Environmental Expectations**. Both the Czechoslovak and Norwegian Ministers of Defence attended and spoke at the conference, which included some forty papers on subjects ranging from base closure issues to environmental auditing. This was the first major commitment by a NACC partner within the context of developing links with NATO over defence related environmental issues.

The achievements of the pilot study on **Defence Environmental Expectations** included the production of two further guidelines, one called the **NATO Environmental Policy Statement for the Armed Forces** and the other the **Guidelines on Environmental Training**. The Military Committee reviewed these and the **NATO Environmental Policy Statement for the Armed Forces** was adopted by the **North Atlantic Council** as a Senior Commander's Guide in October 1993. The approval was one of the last tasks of Herr Manfred Wörner, the former Secretary General before his sudden death in 1994. The significance of this achievement by CCMS cannot be understated. Until the advent of a **NATO STANAG 7141 on Environmental Protection** in 2001 these documents (C-M(93-71)) were the only official NATO statements on environmental actions expected of all NATO forces in peacetime.

Defence Environmental Expectations recognised that information sharing was a key element to the success of environmental co-operation. The support of the USA enabled the pilot study to offer the **NATO Environmental Clearing House System**

(**ECHS**) as an internet based information service. This was a working demonstration of the way NATO and NACC partners could share advice on issues such as the treatment of contaminated soil or noise reduction in shooting ranges. The Washington-based Institute of Defence Analyses managed the ECHS for two years. The **ECHS** was subsequently moved to the **NATO Website**, where it remains in operation in the year 2001.

Defence Environmental Expectations assisted members of NATO and NACC put environmental policies into action by developing environmental training and environmental protection advice. Two NATO Fellowships were used to develop deliverables in this area and the Fellows produced a video on **Managing Hazardous Waste within NATO** for the use of NATO and NACC nations and a report **Environmental Training in the NATO and NACC Countries** based on a questionnaire within NATO and NACC of their expectations and needs for environmental training at officer and soldier levels. Following an approach to the pilot study in July 1992, information on environmental education and training was sent to the **NATO School (SHAPE)**. The pilot study was able to assist in developing course objectives for a new course at the NATO School titled "**Responsibilities of Military Forces in Environmental Protection**". Pilot study members and fellows have been valuable speakers on courses at the NATO School since their inception in 1993. A **Workshop on Pollution Prevention** was held during the August 1993 meeting of the pilot study at the **NATO School in Oberammergau, Germany**.

Defence Environmental Expectations concluded its work in Swansea UK with an **International Symposium on Environment and Defence**, sponsored by the UK Ministry of Defence. Over 130 delegates attended from seventeen countries including ten NACC countries. 54 papers were presented on a wide range of topics under the titles of international issues, environmental assessment of activities, pollution prevention and legal compliance, military noise, military land use issues, conservation and heritage management, environmental training and information technology in defence land management and training. The proceedings were published as **NATO CCMS Report No 211**. This symposium marked the conceptual watershed between the phase of work that centred around investigating environmental issues in the military and work focussing on the adoption of professional environmental practices in defence organisations.

Expansion of the Defence-related Pilot Studies

A further illustration of the NATO Military Committee's interest in environmental training and its respect for the pioneering work of CCMS was shown when the **NATO Training Group Army Sub Group** invited the pilot study to help them set up their **Environmental Training Working Group (ETWG)**. Because CCMS has no facilities to fund such a venture, the Canadian Department of National Defence sponsored pilot study members to attend the inaugural meeting of the ETWG in Montreal, Canada in June 1995. These individuals were key members of ETWG during its early meetings. The ETWG remains an important focus for collaboration over environmental training in NATO/EAPC and is expected to widen its scope to include naval and air forces in 2001.

In many ways the work of the pilot study on the **Use of Simulators as a means of reducing Environmental Impacts caused by Military Activities** went in parallel with these developments. This pilot study was set up to investigate how much environmental benefit could be gained from the use of simulators for military training. It

identified the need for policy analysis management tools, which would give procurement officers an insight into the environmental impacts of different types of weapons training activities, and the role simulators could play in military training. It was a useful series of technical discussions that helped to move the discussion of simulators and simulation forward so that the environmental benefits could be perceived by military planners as well as the benefits for military skills. A Seminar in 1997 entitled ***Simulation: a Challenge or a Benefit*** was held at the NATO School SHAPE, further reinforcing the link between CCMS initiatives and the interests of the military. It should also be noted that the valuable work of the ***Aircraft Noise in a Modern Society*** pilot study had moved into a ***Follow-up stage*** during this period. This was the ***Working Group on Helicopter Noise Prediction Modelling*** (June 1992-Feb 1994) that responded to public annoyance about helicopter noise around airports and military training areas created an urgent need for noise prediction modelling. This Working Group was set up after the ***CCMS Symposium on Helicopter Noise Aspects of Rotary Wing Aircraft*** in Monterey, California USA, July 29-August 1 1991. The main topics studied were helicopter noise measurements, sound propagation, and helicopter noise prediction models. It is interesting to note that Switzerland sent an observer to the seminar and the pilot study.

The CCMS plenary of 10 November 1992 had seen the launch of two completely new pilot studies; ***Cross-Border Environmental Problems Emanating from Defence-Related Installations and Activities*** and ***Protection of Civil Populations from Toxic Material Spills During Movements of Military Goods***. Both these studies involved building close relationships with military and civilian organisations across the political divide. Both were handling difficult and sensitive topics that were the cause for much secrecy in the Cold War. To a certain effect they illustrate the best of this phase of “building trust” within the CCMS and seeing the results produce positive benefits in both policy and practical terms.

The objective of ***Cross-Border Environmental Problems*** was to develop a basis for international co-operation on surveying, assessing and preventing cross-border pollution from defence-related installations and activities. The geographical areas covered by the study were surprising large, and included the Barents and Kara Seas, the Baltic Region and the Black Sea, even including the Danube catchments. The main conclusions detailed a number of pressing concerns over radioactive contamination and the lack of proper storage facilities for radioactive materials, noting that the amounts of radioactive waste resulting from future decommissioning will be much larger than the amounts previously handled. The success of this co-operation led to further work in the Black Sea region to enable environmental collaboration.

Continuation of cross-border studies

Under ***Phase II of Cross-Border Environmental Problems***, four topics were examined: hazardous materials and defence-related activities in the Arctic; radioactive contamination of rivers and transport through rivers, deltas and estuaries to the sea; management of defence-related radioactive waste; environmental risk assessments for two defence-related problems (nuclear powered submarines, defence related radioactive waste in Latvia).

The ***Protection of Civil Populations from Toxic Material Spills During Movements of Military Goods*** pilot study was developed because of the realisation that de commissioning and demilitarisation of large amounts of hazardous materials could put civil populations under significant threat. In addition it focused on how military units might undertake more significant roles in response to civil environmental emergencies. Military support for emergencies is not new, but the idea of “Green Helmets” was something of a surprise. This pilot study was typical of the wide participation of NATO and NACC/PfP nations by this stage, as there were representatives from Albania, Armenia, Belarus, Bulgaria, Canada, Czech Republic, Estonia, Finland, Germany, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Netherlands, Norway, Poland, Romania, Russia, Slovak Republic, Sweden, Ukraine, and USA. It is of note that although this was nominally a military related Pilot Study; in practice it dealt with civilian regulations and with their adoption and compliance. For some military organisations this was the first time they had studied civilian standards in detail because many had been exempt until this stage. Hence the study lasted from 1992 – 2000 during which period many national regulations were developed.

Environmental aspects of reusing former military lands

The third major pilot study that built practical co-operation between NATO and PfP nations at this stage was on ***Environmental Aspects of Reusing Former Military Lands***. There were two phases, Phase 1 (1994-1996) and Phase 2 (1996-1998). This pilot study examined methods and formats for assessing the environmental characteristics of military lands for reuse including land selection criteria, types of contamination, risk assessment approaches and prioritisation methodologies. It also identified the most practical, expedient and cost-effective approaches to remediation. This pilot study was promoted by the two nations who had most to offer. The USA had a wealth of experience in dealing with environmental aspects of clean up. Germany had recently acquired many areas despoiled by the military during the Cold War period and was willing to share its experience with others. The USA funded research into a document on the ***Sources of Financial Assistance for the Environmental Restoration of Former Military Land***. This was aimed at assisting the CEE countries and classified sources from a wide range of government and non-governmental sources. Phase II of this study developed five potentially viable project proposals for specific site restoration and reuse. The pilot study also developed a ***Handbook on the Reuse of Former Military Lands***, which may be applied to any site in any nation. This handbook is a reference tool that will need to be adapted to each nation's own needs and structure. The major value from this effort was the demonstration of cost-effective environmental remediation. This had relevance well beyond the military sector and linked to many non-military CCMS Pilot Studies and to NATO Science work. It benefited from the generous support of the USA and Germany. The follow up from this work is of interest to the ***UN Environment Programme (UNEP)*** and to many other technical and scientific bodies in the EU and beyond.

Follow-up Pilot Study on Aircraft Noise

During the later part of this phase of CCMS work the ***Follow-up Pilot Study on Aircraft Noise*** hosted two conferences. The most impressive was the 2nd International ***Conference on The Role of the Military in Protecting the Ozone Layer***, held in NATO Brussels on January 24-25, 1994. It attracted 165 delegates from across NATO and EAPC countries. This was a follow up to the Conference on the Role of the Military in Implementing the Montreal Protocol held in Williamsburg, Virginia, USA, from

September 11-13, 1991. This conference was to focus on the topics of Ozone Depleting Substances (ODSs) in military applications including halon fire protection, aerospace and electronic solvents and shipboard refrigeration. In the end the response to the call for papers had been so considerable that the conference had sixteen technical sessions and a total of some sixty-four presentations. It must be concluded that this conference was a resounding success that reflected well on the ability of NATO-CCMS to bridge not only the NATO/PfP divide but also include military from non-NATO countries. The second meeting was the ***Symposium on Aircraft Noise Abatement Receiver Technology*** held in Baltimore, Maryland, USA, from May 16-20, 1994. It was co-chaired by two people who helped to start the CCMS defence related environmental studies in the 1980s, Mr Gary Vest (USA) and Mr Anthony Downs (Canada). It went under the general title "***Planning for the airports/airfields and military operating areas today, tomorrow and in the next century***". This was a major military aircraft noise symposium with the aim to assess the current/future flying conditions and aircraft technologies; current/future affected environments; current/future abatement technologies applicable to the receiver environment; noise impacts on humans, animals and structures; and current/future planning, infrastructure developments and research needs.

In many ways this symposium reflects the transition between CCMS as a committee attempting to get co-operation between different traditions to a committee that forecasts the standards for the future. The transition between old and new is also marked by the way that NATO and EAPC members promoted the development of their newly established Offices or Departments responsible for environment matters. For example, the Environmental Security Centre of the Armed Forces in Budapest Hungary, the structure for military environmental management in Romania, or the regional Environmental Training Centre established later on in Ankara, Turkey.

THE THIRD PHASE – MATURITY IN ENVIRONMENTAL SECURITY STUDIES

In 1995, the USA hosted a CCMS ***Round Table Discussion on Environmental Security*** in Washington DC on 14th November. The attendance was impressive (88 people attended from 14 NATO and 18 NACC/PfP countries) and the speakers were some of the most influential policy makers in defence. Keynote addresses were given by Mr Leon Furth, National Security Advisor to Vice President Gore, Ms Sherri Goodman, Deputy Under Secretary of Defense (Environmental Security) and Admiral William Owens (US Vice Chairman of the Joint Chiefs of Staff). Dr Jean-Marie Cadiou, Assistant Secretary General for Scientific and Environmental Affairs, represented NATO. The aim was to start a process of serious discussions into the link between global environmental change and security. The meeting concluded that they were unsure of the detail, that there was considerable scope for research and that a CCMS pilot study was a vehicle to investigate this kind of issue in further depth in the future.

The International Security dimension

The ***Pilot Study on Environment and Security in an International Context*** ran from 1996-1999 reflected a new departure for CCMS in that the majority of participants were no longer from a military background. CCMS was now reaching out and asking for ideas from across the world; from international organisations, NGOs, and academics as well as from military policy makers. Participants came from Austria, Belarus, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Kyrgyz Republic, Latvia, Lithuania, Moldova, Netherlands, Norway,

Poland, Romania, Russian Federation, Slovakia, Spain, Sweden, Switzerland, Turkey, the former Yugoslav Republic of Macedonia*, UK, and the USA.

The aim of the study was to prepare a report that summarised the relationship between environmental change and security at the regional, international and global level. The main goal was to enable decision-makers to integrate environmental considerations into deliberations on security issues. The pilot study recognised the principle of sustainable development as an idea through which environmental, economic and social issues could be pursued in an integrated manner.

Pilot studies do not usually investigate such “cutting edge” issues as this one did. The final product is a fascinating compilation of state-of-the-art research on the relationship between environmental change and security. A large part of the pilot study's work was dedicated to developing parameters for response mechanisms aimed at reducing the potential incidence or escalation of conflict, thereby enhancing security at the earliest possible stage. The structure of the pilot study reflects this orientation towards practical action. Another characteristic of this pilot study is that it discussed innovative policy responses for dealing with environmental stress and its potential effects on security.

For example the final report outlined a typology of environmental conflict cases. It also sought to advise policy makers in terms of integrated risk assessment, to establish guidelines for assessing and prioritising the potential impact of different types of environmental change on security. The report came up with a number of key findings to assist in policy making. The issue is a complex one and the participants could not identify an easy solution or promote a quick fix. Seven categories of policy areas where actions could be undertaken in response to the impact of environmental stress were presented:

- Characterisation of environmental conditions that could be the root cause of the conflict.
- Integrated assessment of an environmental issue.
- Early warning.
- Preventive diplomacy.
- Permanent mechanisms for dispute resolution.
- Crisis management.
- Post-crisis management.

The ***Pilot Study on Environment and Security in an International Context*** was an innovative topic for NATO CCMS where discussions had been more tangible issues in the past, such as contaminated land or aircraft noise. These new policy areas provide a firm basis for future discussions and scenario building. The follow up is expected to be the province of NATO decision makers and organisations such as the OSCE and the United Nations through their operational arms such as UNEP.

Promoting Regional dialogue

NATO-CCMS has worked to continue to get nations to collaborate and to this effect has held series regional environmental workshops since 1999. The CCMS ***Workshop on the Environmental Security of Oil Pipelines in Georgia*** was held in Tbilisi, Georgia, on 14-17 October 1999 and chaired by Dr Keith Gardner (Deputy

* Turkey recognises the Republic of Macedonia with its constitutional name

Assistant Secretary General, NATO Scientific and Environmental Affairs). The workshop was addressed by Mr Vano Chkhartishvili, Deputy State Minister of Georgia who pointed out that this was the first security and environment related event held in Georgia, thanks to NATO. There were four technical sessions; environmental and economic aspects of oil pipelines; the Caucasus Region and the security aspects of an oil pipeline; oil spill prevention, preparedness and response; prospects for technical cooperation, international programmes and projects.

The CCMS ***Workshop on Ecological Problems from Defence Activities in the Black Sea and Azov Sea***, was held in Sevastopol, Ukraine, 25-27 October 1999, sponsored by NATO CCMS and the Ministry of Defence of Ukraine. The meeting was introduced by Mr M. B. Yezhel, Deputy Minister of Defence of the Ukraine and looked at the ecological problems in the Black Sea and Azov Sea, the structural and organisational framework of Environmental Protection in the Navies of NATO and Partner Nations. It then moved to consider conceptual approaches to providing ecological security at Navy Ports and methods of environmental restoration, possible ways of co-operation between Partner Countries in dealing with the aftermath of ecological accidents and catastrophes at sea.

Environmental Management Systems

The ***Pilot Study on Environmental Management Systems in the Military Sector*** looked at the detail of military activities and attempted to illustrate the value of a systematic approach to environmental management. Participation was high, with people from Belarus, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, Georgia, Germany, Hungary, Italy, Latvia, Lithuania, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, the former Yugoslav Republic of Macedonia, UK and the USA. The objectives were to identify the possible implications of initiating and implementing Environmental Management Systems (EMS) in the military sector and to develop application guidelines, frameworks and models appropriate to the military sector. EMS at the very least provides safeguards for top management that environmental legislation is respected. In addition, the ISO 14001 standard demands continual improvement of the environmental performance of the (military) organisation. This is unique to environmental management systems in general, but specially to the ISO 14001 standard. The greatest contribution of this Pilot Study is probably the final report, which is essentially a set of guidance notes for military organisations considering the implementation of EMS. It was authored through a consortium of NATO countries working by email. The Pilot Study generated much interest and this led to a ***CCMS Workshop on Environmental Management Systems in the Military Sector*** in Switzerland from 22-26 Jan 2001 that investigated progress in implementation of EMS across NATO and the Partner countries.

Maritime environmental interests

For some reason the maritime interests of NATO had not been investigated by CCMS in its early years. This was rectified in an innovative collaboration with ***NATO's Special Working Group 12*** that deals with ***Maritime Environmental Protection***. CCMS hosted a symposium in Jurata, Poland, 8-21 Nov 1996 and called it ***Partnership for environmental protection – environmental engineering related to Naval Warfare activities***. This was a unique opportunity afforded by CCMS to bring NATO's technical expertise in Maritime Environmental Protection to the attention of NACC/PfP.

It was enthusiastically received because it covered issues of concern to the NACC/PfP attendees, particularly the issue of the International Maritime Organisation's (IMO) certification of oil water separators, Ozone depleting substances (ODS) from a naval perspective and oil spill prevention and response. Recommendations were made that all maritime environmental protection issues affecting NATO and Cooperation Partners identified for international dialogue should be co-ordinated with SWG/12; that interested Cooperation Partner navies might request assistance from SWG/12 expert teams; and that Cooperation Partners should participate in future technical sessions of SWG/12. The CCMS **Workshop on Ecological Problems from Defence Activities in the Black Sea and Azov Sea** in 1999 (noted above) involved a significant component of work from SWG/12.

Recent Military Noise studies

Also typical of this professional phase of development was the latest work from the Pilot Study on Aircraft Noise Follow-up Group which established a **Working Group on the Effects of Noise from Weapons and Sonic Booms, and the impact on Humans, Wildlife, Domestic Animals and Structures** (May 1994 - current in 2001). Improvements in conventional arms have led to noisier weapons firing at more distant targets than in the past. In many cases the training with these weapons, often with ranges to 30kms, has outgrown the land areas originally set aside for this training. To accommodate increased target distances the training area managers have to permit weapons to be fired closer to the site boundary, or from areas separate to the impact zone, thus increasing noise levels in neighbouring communities. Requirement for night firing has further exacerbated the problem. Early attempts by various NATO countries to regulate weapon noise exposure in local communities were hampered by insufficient research. In addition, work that was done tended to be carried out in isolation or buried in government reports or subject to security restrictions. The need for co-operation was raised by Norway at the NATO **CCMS Symposium on Aircraft Noise Abatement Receiver Technology**, Baltimore, Maryland USA 16-20 May 1994. The study includes the impacts of noise from shooting, from blast and from sonic booms. The terms of reference of the Working Group included weapon measurements (emissions, metrics etc.), acoustic modelling, and noise effects on animals, humans and buildings. The participants recommended research methodologies for research on the impact of weapon noise and sonic booms on wildlife, humans and structures. They suggested the establishment of an international database/bibliography on findings, surveys and scientific research on these topics. Their final report was prepared in 2000 and proposed a significant **Conference on International Military Noise** April 24-26, 2001, in Baltimore, Maryland USA, sponsored by the United States Department of Defense and the US Army Center for Health Promotion & Preventive Medicine. This conference has a very wide scope within the overall remit of the **Working Group on the Effects of Noise from Weapons and Sonic Booms, and the impact on Humans, Wildlife, Domestic Animals and Structures**.

Professional environmental collaboration

It can now be seen that the specialist professional interests within NATO and PfP can be catered for by CCMS. The **Pilot Study on Sustainable Building for Military Infrastructure** came out of a short-term project that reviewed the scope of the issue. The "new" leaders are technical people with a military background. The objectives of the project were to:

- Establish to what extent participating countries have developed and implemented policies on sustainable building.
- Share experiences and successes in this field.
- Demonstrate good examples of sustainable techniques in building projects.
- Improve awareness of “green” design and assessment tools.
- Establish a network of sustainable building experts.
- And to make plans for future action.

This new professional approach is reflected in the preparation of the ***Environmental Guidelines for the Military Sector*** sponsored by CCMS and prepared jointly by the Defence Ministries of the United States and Sweden from March 1996-April 1997. It is published as a Handbook of 53 pages in two colours with photographs and diagrams. The purpose of the handbook is to assist the military sector of any country with the development of an effective programme that both protects human health and the environment as well as effective and safe execution of the military mission. The guidelines use international agreements, treaties or conventions to establish the framework for recommended actions. The guidelines also use the experiences of many countries to provide approaches to solving environmental problems. It was heavily used in the development of the ***Model Work Plan*** and fits well with the Final Report of the ***Pilot Study on Environmental Management Systems in the Military Sector***, a set of Guidelines for the adoption of ISO 14001 or a similar EMS. The most recent development in this sphere has been the setting up of a ***Pilot Study on forms of Environmental Education in the Armed Forces and their impact on the creation of pro-environmental attitudes***. This study is being led by Poland, a new NATO member. It had its first meeting in Warsaw in March 2001 and second meeting organised for September 2001.

THE WAY FORWARD

NATO CCMS has made enormous changes to the attitudes within the militaries of NATO and the PfP countries. It can be seen that ideas and actions have progressed through a series of phases. Phase One could be referred to as “***tentative attempts to open the military’s own eyes***” to the realities of the changes in the political and social attitudes of the 1980s. The ***Pilot Study on Aircraft Noise*** and the ***Pilot Study on Environmental Awareness in the Armed Forces*** were very much in this mould. Phase Two was characterised above as “***Building Trust between NATO and NACC/EAPC***” and achieved an enormous range of pilot studies, symposia and workshops that generated valuable links between NATO and its Partners. The final, and current Phase is one of “***Maturity in Environmental Security Studies***” when the professional environmental scientists and policy makers can work with the military authorities to embed environmental ethics into the military.

However, although NATO-CCMS has made great progress, all is not as well as it might be. The organisation appears to have reached a plateau. The way forward, if it is to be systematic, will probably adoption some ideas from the CCMS ***Model Work Plan***, first investigated at the ***Euro-Atlantic Workshop on Military Activities and the Environment*** in Warsaw, Poland, on 8-10 June 1998. Over 150 participants from 29 countries attended the workshop, which was to review the CCMS defence related studies and then to prepare an outline for a ***Model Work Plan***. This was seen as a vehicle to encourage the development of defence related work in EAPC countries and encourage more bilateral and regional approaches. The model was designed to provide a step-by-step method to initiate and continue work within the military sector. The

Model Work Plan drew heavily on the example of the **Environmental Guidelines for the Military Sector** (US/Sweden) and envisaged:

- The development of national inventories of the military lands and environmental impacts on them, etc.
- National Environmental Policy development.
- Planning of defence-related environmental programmes.
- The execution of conservation, pollution prevention, hazardous material handling, clean up, education and training in the military.
- The development of measures to determine progress.
- More public involvement and relationships with local governments by the military.
- Bilateral, regional and other international defence-related environmental co-operation.

The Model Work Plan went into the “pending tray” because it appeared to be too ambitious for NATO CCMS at the time. But, by turning their back on the Model Work Plan they have failed to answer the following questions. What should NATO-CCMS be doing to advance defence-related environmental studies? What structures are needed to gain the maximum results from the minimally funded CCMS?

New Challenges to Modern Society

There are a host of security-related challenges to modern society out “in the real world”. There is no doubt that there is a need to continue with the regional security dialogues and to continue to strengthen the place of defence related environmental discussions in the Russia-NATO, Ukraine-NATO, PfP and Mediterranean Forum. However, the following are just a few of the topics that need to be addressed in an international context.

The needs of defence professionals for environmental advice. Government officials in defence organisation, particularly those in EAPC countries, do not have ready access to environmental information, and much of the defence area is under-researched. For example, the **Pilot Study on Environmental Management Systems** was an enormous help. In consequence there is a need for continuing support to assist in the implementation of EMS. The same can be said for environmental training or for equipment procurement. But the support on offer from NATO is minimal and wholly inadequate for the world’s largest military alliance.

The impact of environmental issues on military operations. As yet it is unclear if anyone is prepared to discuss the significance of the new societal attitude to environmental matters on the prosecution of peace-making and its last resort with offensive actions. The generals have always said that NATO will end up fighting its wars “with one hand tied behind its back” because of the environmental considerations. But what do they mean? Is “the environment” nowadays a constraint on military action that they must accept, just as they do with logistics or terrain? NATO-CCMS could start by opening a discussion on the impact of environmental protection on contingency operations, bringing together experiences from forty years of peace-keeping by the military and combining it with the intellectual energies shown during the **Pilot Study on Environment and Security in an International Context**.

Non-traditional threats to security. There are numerous actual and emerging threats to modern society that require an environmental security perspective in deliberations. CCMS should address threats that include:

- The exploitation of the vulnerability caused by modern society's reliance on information technology.
- The continuing threat of bio-terrorism and eco-terrorism to civil populations.
- The threat to stability caused by international criminal organisations, particularly those dealing with human trafficking, drugs and money laundering.

The link between the military and civil protection. NATO and EAPC military forces built up impressive skills in Civil Military Co-ordination (CIMIC) during the Bosnia/Kosovo operations. The nature of modern conflict is such that it impacts more on civilians than the military. The protection of the civil population in a theatre of operations is a combined effort between the military, local government and the NGOs. Each may have a separate agenda and misunderstandings are common. However, although NATO has developed doctrine for CIMIC, there are few examples of best practice outside of military specialist handbooks. The Military Committee jointly with CCMS, in conjunction with OSCE, would be an ideal vehicle through which to bring together the military, humanitarian organisations and local government interests to promote better understanding in this area.

CCMS Management Structure and Leadership

As a matter of policy CCMS has been deliberately run in an ad-hoc fashion with minimal staff and a small budget. Its supervising body is the CCMS Plenary that meets twice a year with representation from each NATO nation. The CCMS Plenary is chaired by the Assistant Secretary General for Science and the Environment, considers a report from the Programme Director and reviews proposals made by the National representatives for future Pilot Studies. It then meets for reporting purposes in EAPC format. Very few of the Plenary delegates have a background in either defence or environmental affairs. Some delegates are sceptical of the place of professional defence related work within CCMS. Because the nations fund their own involvement with the Pilot Studies, the Plenary is not critical over progress or prepared to scrutinise standards within the Pilot Studies. In practice the CCMS Plenary has little executive power, so it is essentially a "rubber stamp" for the Programme Director's report.

In the past the NATO national authorities have survived with minimal leadership from the Scientific and Environmental Affairs Division because of the dedicated involvement of champions of their own, who had their own budgets. The review of the pilot studies and symposiums above mentioned the names of Gary Vest (US), Tony Down (CA), Erling Wang (NO), the late John Stuart (UK), Cees Nagelhout (NE) and Ales Komar (CZ). It was these individuals, and many others like them, who made the defence environmental work happen in the 1990s. It is estimated that the US injected some \$1.5m into international co-operation in environmental security, and there were significant contributions from Canada, Norway, UK, Czech Republic and Hungary. All the champions have now retired, or are soon to be replaced. There is now a leadership vacuum in the defence environment sphere. It will have to be filled through a more structured way of working, and with more staff support for the Programme Director.

The other pressing need is for a practical link between CCMS and the Military Committee, perhaps for a Liaison Group that includes the Assistant Secretary General and a senior representative of the Military Committee. In practice the work of CCMS in defence environmental issues and the military interest move in parallel. The military's STANAG 7141 on Environmental Protection (eventually produced after overlong discussions in 2001) benefited from the work CCMS had previously carried out in 1993. How much better it would have been if the military had a better insight into CCMS and were able to draw directly on its support.

Conclusion

In conclusion, the achievements of NATO-CCMS are significant and it is hoped that they will be long lasting. This short review has not been able to describe every CCMS defence related environmental activity, because one of CCMS's major achievement has been to encourage individuals and organisations to work together through their own bipartisan arrangements. The future may well see other security and environmental organisations such as OSCE and UNEP/UNDP take more interest in defence related environmental issues. Such a move will be able to benefit from the hard work done under the CCMS umbrella by the permanent staff and the pilot study volunteers throughout NATO and EAPC/PfP. However, NATO Scientific and Environmental Affairs should not be comfortable with seeing the vacuum filled by outside organisations. It should be seizing this opportunity and strengthening CCMS's success over defence related environmental studies. Environment and human security are two of the greatest challenges to modern society in the new millennium. NATO has a unique opportunity to promote further understanding of their interrelationship, from a position of strength and knowledge. It would be a tragedy to back away now.

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