PRELIMINARY REPORT
ON THE

NATO/CCMS ENVIRONMENTAL SECURITY CONFERENCE

Center for Strategic Leadership
U.S. Army War College
Carlisle Barracks, PA

Rapporteur
John Auger

Editor
Kent Hughes Butts

Composition
Mrs. Mary Jane Semple

Cover Artist
Mr. James E. Kistler

*****

*****

The seminar coordinators wish to thank Mr. Brian Smith and Ms Laurie MacNamara of Evidence Based Research, Inc., Dr. Brian Shaw, Manager of the Center for Environmental Security, Pacific Northwest National Laboratory, Mr. Alexander Carius of Ecologic (Germany), Ms. Wendy Grieder from the U.S. Environmental Protection Agency, and Lieutenant Colonel Anthony Paternostro for their incisive comments and assistance in planning and running this Conference.

*****

Comments pertaining to this report are invited and should be forwarded to: Center for Strategic Leadership, U.S. Army War College, Carlisle Barracks, PA 17013-5049. Comments may also be conveyed by electronic mail to perryj@csl-emh1.army.mil or by calling (717) 245-3226 or DSN 242-3226.

September 1997

Table of Contents

APPENDICES:

FOREWORD

Environment issues are widely recognized as potential causes for instability and conflict. Recognizing these dangers, NATO's Committee on the Challenges of Modern Society (CCMS) directed a Pilot Study, "Environment and Security in an International Context," to analyze the relationship between environmental change and security in an international, regional, and global level. The main goal of the study is to elaborate conclusions and recommendations to enhance environmental aspects in security deliberations, and to include security considerations in national and international environmental policies and instruments. The Third Pilot Study Group meeting took place from May 19th through May 22nd, 1997 at the Center for Strategic Leadership (CSL), U.S. Army War College in Carlisle, Pennsylvania. The meeting was co-hosted by the Center for Environmental Security of Pacific Northwest National Laboratory. A group of environmental and policy experts from NATO and Eastern Europe met to discuss and to craft multi-disciplinary and multi-lateral approaches to the problem.

Using the advanced technological capabilities of the Army War College's Collins Hall, the participants developed, discussed, and commented on a broad range issues. A summary of their activities is compiled in this report.

The Center for Strategic Leadership and the Center for Environmental Security of Pacific Northwest National Laboratory are pleased to have co-hosted this conference on the Environment and Security in an International Context in collaboration with the NATO Committee on the

Challenges of Modern Society. We hope that the ideas and concepts presented herein will contribute to the solution of this problem.

RADM THOMAS R. FOX,
USN (RET.)
Associate Laboratory Director
Pacific Northwest National Laboratory

DOUGLAS R. CAMPBELL
Professor
Dir, Center for Strategic Leadership
U.S. Army War College

PREFACE

In the post--Cold War world, policy makers are delving more deeply into the causes and consequences of instability and conflict. As we grapple with these complexities, we are becoming increasingly aware of the key role environmental degradation and scarcity play in this multivariate equation. The 1996 U.S. National Security Strategy recognized that "a number of transnational problems which once seemed quite distant, like environmental degradation, natural resource depletion, rapid population growth and refugee flows, now pose threats to our prosperity and have security implications for both present and long--term American policy." Former U.S. Secretary of State Christopher, in a major speech at Stanford University in April 1996, stressed that "addressing natural resource issues is frequently critical to achieving political and economic stability, and to pursuing U.S. strategic goals around the world." Indeed, during his tenure Secretary Christopher embarked on an effort to more fully engage the State Department in the environmental aspects of foreign policy; Secretary Albright has since demonstrated insightful leadership in advancing environmental diplomacy on many fronts. And, as is well known, Vice President Gore has been a tireless champion of the environment. His recent work on the cooperative effort he chairs with the Russian Prime Minister, known as the Gore--Chernomyrdin Commission, has been based in part on his recognition that underlying environmental problems are linked directly to the future stability and security of Russia.

We at the U.S. Department of Defense recognize environmental security as a critical component of national

security. Our International Environmental Security program has as one of its major missions to pursue knowledge and foster better understanding of environmental, safety, or health conditions which could lead to instabilities among peoples or countries. To carry out this mission, we are contributing to the understanding of how environmental factors, in certain political, economic, social, and cultural contexts, can instigate or exacerbate instability or conflict. The Defense Department's role is to use our capabilities to detect, forecast, and prevent, where possible, untenable security situations induced by environmental factors. International Environmental Security provides an excellent example of former Secretary of Defense Perry's visionary concept of "Preventive Defense," which seeks to use our defense resources to prevent the causes of conflict and create the conditions for peace.

I am very pleased to serve as co--chair of the NATO CCMS Pilot Study *Environment and Security in an International Context,* the subject of this report. The focus of the Pilot Study is to examine the relationship between the environment and security in a broad international context. The Pilot Study aims to develop a predictive framework and methodology for examining cases of tension, grievance and conflict where environmental factors play a key role. The Pilot Study will also produce a general set of policy recommendations for predicting, preventing, and/or mitigating environmentally--induced tension and conflict. A specific set of policy recommendations will be developed for the North Atlantic Council.

Representatives from NATO, North Atlantic Cooperation Council (NACC), and Partnership for Peace (PfP) member countries attended the first meeting of the Pilot Study in Waldbrol, Germany in April 1996, where the

overall methodology and terms of reference for the Pilot Study were drafted. The Pilot Study's three subgroups were established at the next meeting in Ankara, Turkey in November, 1996. The subgroups are as follows: Subgroup #1 -- Definition and Modeling; Subgroup #2 -- Definition and Development of Databases and Decision Support Systems; Subgroup #3 -- Policy Responses. The US Army War College at Carlisle Barracks, Pennsylvania, USA hosted the third plenary meeting in May 1997, which is the subject of this report. At the Carlisle meeting the members reviewed the progress of the subgroups, approved a structure for the final report and established a schedule for the balance of the meetings related to the Pilot Study. This meeting also featured an environment and security gaming exercise which was the first of its kind to explore the linkages between environmental security concerns and NATO policy responses. The next plenary meeting is scheduled to be held in Vienna, Austria in March, 1998, with the final report due in early 1999.

The Pilot Study will advance both the state--of--the--art and the state--of--the practice on international environmental security concerns. I look forward to continuing our work with leading practitioners and scholars from the NATO, NACC, and PfP member countries.

GARY D. VEST
Principal Assistant
Deputy Under Secretary of
Defense (Environmental
Security)

ACRONYMS

AMEC	Arctic Military Environmental Cooperation
AOR	Area of Responsibility
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CCMS	Committee on the Challenges of Modern Society
CSCE	Conference on Security and Cooperation in Europe (later OSCE)
CSD	Commission on Sustainable Development
DOD	Department of Defense
DOE	Department of Energy
DOS	Department of State
ECE	Economic Commission for Europe
EPA	Environmental Protection Agency
EU	European Union
EUCOM	European Command
FAO	Food and Agricultural Organization
FAFORSE	Federal Armed Forces Office for Studies and Exercises (Germany)

G-7	Group of 7 (Canada, France, Germany, Italy, Japan, UK, and US)
GATT	General Agreement on Tariffs and Trade
IAEA	International Atomic Energy Agency
IDA	International Development Association
IFOR	Implementation Force
ILO	International Labor Organization
IMF	International Monetary Fund
IMO	International Maritime Organization
ITU	International Telecommunication Union
MERCORSUR	Southern Cone Common Market
MOU	Memorandum of Understanding
NACC	North Atlantic Cooperation Council
NAFTA	North American Free Trade Association
NATO	North Atlantic Treaty Organization
OAU	Organization of African Unity

OECD	Organization for Economic Cooperation and Development
OSCE	Organization on Security and Cooperation in Europe
PACOM	Pacific Command
PfP	Partnership for Peace
SACEUR	Supreme Allied Commander Europe
SFOR	Stabilization Force
TOR	Terms of Reference
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNIDO	United Nations Industrial Development Organization
WEU	Western European Union
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization

CHAPTER I
INTRODUCTION

The U.S. Army War College Center for Strategic Leadership and the Center for Environmental Security of the Pacific Northwest National Laboratory cohosted the NATO Committee on the Challenges of Modern Society (CCMS) Pilot Study “Environment and Security in an International Context" Conference and Meeting from May 19th through May 22nd, 1997 at the United States Army War College, Carlisle Barracks, Pennsylvania. Participating countries were Austria, Belarus, Canada, Czech Republic, Finland, France, Germany, Hungary, Kyrgyz Republic, Latvia, Lithuania, Moldova, Poland, Romania, Slovak Republic, Sweden, Switzerland, Turkey, and the United States. A list of attendees is included in Appendix A. This was the Third Meeting of the “Environment and Security in an International Context” Pilot Study, and it built upon earlier meetings in Waldbroel, Germany in April 1996 and Ankara, Turkey in November 1996. The meeting was co-chaired by Mr. Gary D. Vest, Principal Assistant Deputy Under Secretary of Defense (Environmental Security), United States Department of Defense and Mr. Kurt M. Lietzmann, Federal Ministry of Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany.

Objective.

The objective of the Third Meeting was to discuss the overall work program of the Pilot Study as it has been developed within the three subgroups. The main discussions concentrated on (1) contextual issues (to which degree

environmental problems contribute to the occurrence of serious conflicts), (2) issues of indicator development, and (3) policy options to be further discussed in the areas of foreign and security policy as well as environmental and development policy. Appendix B contains the Terms of Reference for the CCMS Pilot Study "Environment and Security in an International Context." To accomplish its objective, the Conference included a series of Subgroup Meetings, a Plenary Business Meeting, two Panel Sessions, an environmental security game (the results of which are published separately) and a final Plenary Session. The meeting Agenda is included as Appendix C.

The Committee on the Challenges of Modern Society (CCMS).

The Committee on the Challenges of Modern Society (CCMS) was established in 1969 in order to give the Alliance a new "social dimension." Its aim was to attack practical problems already under study at the national level and, by combining the expertise and technology available in member countries, arrive fairly rapidly at valid conclusions and to make recommendations for action to benefit all. On 10th March 1992, the Workplan for Dialogue, Partnership and Cooperation issued at the meeting of the North Atlantic Cooperation Council (NACC) included enhancement of participation of Cooperation Partners' experts in CCMS activities. The first plenary meeting of NATO/CCMS with NACC countries was held on 23rd February 1993 in Brussels. It was agreed that Cooperation Partners could propose new pilot studies provided there is an Alliance country as co-pilot and at least two other Alliance countries as participants.

The Committee meets twice a year in plenary session and annually with NACC countries. The Committee does not itself engage in any research activities; its work is carried out on a decentralized basis, through its pilot studies. Subjects for pilot studies cover a large spectrum dealing with many aspects of environmental protection and the quality of life, including defense-related environmental problems. So far 51 pilot studies have been completed and twenty are underway. Each pilot country, working with other interested NATO and NACC member countries (and possibly with other countries), is responsible for developing, conducting, and disseminating the results of a pilot study. The CCMS pilot studies are funded by nations. Reports on the progress of studies are submitted to the Committee by pilot nations at regular intervals. On completion of a study (which normally takes three to four years) a summary report is forwarded to the North Atlantic Council whilst a lengthier, technical report is published by the pilot group and made available on a worldwide basis to anyone expressing interest.

The "Environment and Security in an International Context" Pilot Study.

The purpose of this pilot study is to analyze the relationship between environmental change and security in an international, regional, and global level. The main goal of the pilot study should be to elaborate conclusions and recommendations to enhance environmental aspects in security deliberations, and to include security considerations in national and international environmental policies and instruments. These conclusions and recommendations will be designed to provide a basis for senior-level decision-making. The pilot study will develop methodologies and approaches for analysis and prioritization of

environmentally-induced security risks. It should also elaborate new priorities in national and international policy-making including institutional arrangements. The pilot study should be conducted with a view to designing appropriate preventive measures and strategies. Another goal is to enhance the capacity to analyze the evolving interaction between environment and security. Sustainable development and a precautionary approach should be stressed as guiding principles for measures in the field of environment and security. The implications of the Pilot Study recommendations on environmental security are particularly important given the new NATO Strategic Concept. This strategic concept recognizes changes in the security environment and the emergence of threats from non-traditional sources, and treats economic and environmental elements, as well as defense, as security components.

CHAPTER II
SUBGROUP WORKING SESSIONS

The Conference began with a series of Subgroup Working Sessions to discuss the work that had been accomplished in accordance with the Study methodology developed at the January 21-22, 1997 meeting in Washington, DC. See Appendix D. Mr. Larry Blotzer of the Center for Strategic Leadership, U.S. Army War College welcomed the attendees and provided an overview of the administrative and logistical support for the Conference, a description of the capabilities of the Collins Hall gaming facility, and a short history of the Army War College. Mr. Gary Vest, U.S. co-chair of the Pilot Study and Subgroup One then welcomed the group. He noted that both the recent Committee on the Challenges of Modern Society (CCMS) Plenary Meeting and the recent North Atlantic Cooperation Council Plenary Meeting had expressed interest in this meeting of the Pilot Study on "Environment and Security in an International Context." He believed that the potential use for the study was significant in both fora. Mr. Kurt Lietzmann, German co-chair of the Pilot Study and Subgroup One also welcomed the group. He supported Mr. Vest's comments on the importance of the Pilot Study. He pointed out that the thrust of the Pilot Study goes beyond scientific and technical analysis to have significant impacts on security policy. He noted that it might be necessary to change the schedule in order to come to solid rather than quick conclusions. He expressed the pleasure of both co-chairs at the expanded participation at this meeting of the Pilot Study.

Subgroup One - Definition and Modeling

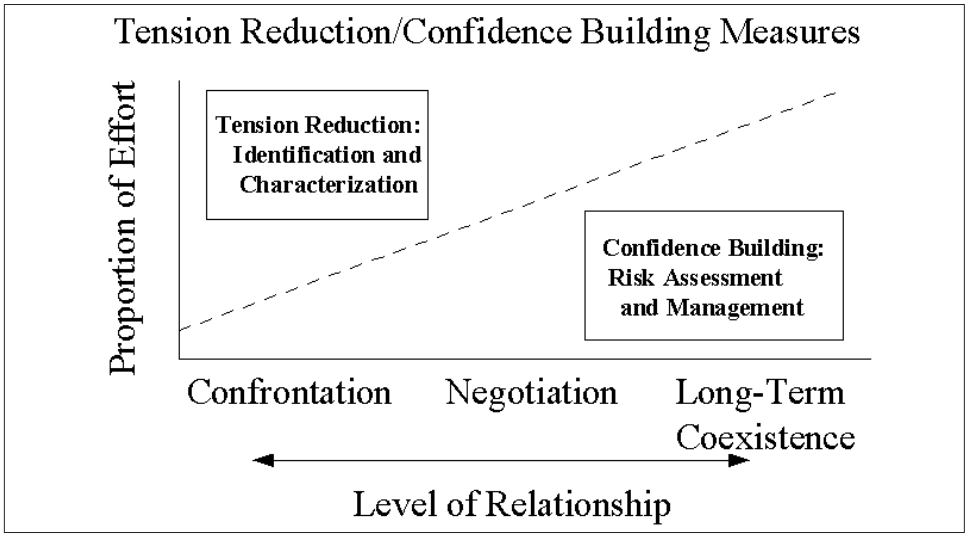
Mr. Gary Vest and Mr. Kurt Lietzmann co-chaired this subgroup presentation. Mr. Brian Smith of Evidence Based Research, Inc. provided a briefing on "Alliance Security Frontiers in the New Security Environment." See Appendix E. All presentations were designed to stimulate discussion on their topics in order to explore the perspectives of all conference attendees and to develop a consensus on the issues under study. Mr. Smith reviewed the charge to this Subgroup as agreed to at the January meeting which was to define the NATO security boundary conditions and to identify what policy goals were to be maximized. In this context he outlined applicable articles within the treaty and also discussed the new NATO Strategic Concept, first promulgated in 1991, and its impact on the Alliance. He also reviewed the role of NATO forces in the New Strategic Concept. He then went on to define When an environmental issue became a security issue in the NATO policy context; his analysis concluded that this occurred when "one of the member states perceives an environmental problem as having become a political problem." Throughout the presentation there was much dialogue which was to be incorporated into the Subgroup report out during the Plenary Session on May 20th. Participants noted that Article 7 made clear to member countries that there was no contradiction between membership in NATO and membership in the UN. A subgroup member commented that the absence of legal advice to the group was a problem, on the other hand several participants in the Pilot Study meeting are experts in public international law. Another noted that perhaps the Pilot Study should draft an agreement on environmental matters. It was also pointed out that the group must consider the concept of Sustainable Development as articulated in Rio in 1992. In response to this it was noted that the Rio Treaty was adopted by individual nations and not by NATO and that nations can do this without

contravening the NATO Treaty. Another participant noted that the group needed to take into account the expansion of NATO and that NATO's new task is "to project stability beyond NATO boundaries." It was pointed out that an environmental crisis could be outside of NATO and not include a NATO member. In reply, another participant stated that the focus should be on NATO's Area of Responsibility. All these comments were noted by the subgroup for consideration in its final report out on May 20th.

Major Volker R. Quante of the German Federal Armed Forces Office of Studies and Exercises (FAFORSE) provided additional "Recommendations to the NATO CCMS Pilot Study" to expand on the presentation by Brian Smith. See Appendix F. He noted that the common security policy is based on three mutually reinforcing elements: dialogue, cooperation, and common defense. He continued that crisis management can be seen as a second dimension of Alliance activities, next to collective defense. The regional scope of NATO will add an Asiatic-pacific component next to the Transatlantic one. One co-chair noted that there has always been an international dimension to the CCMS. As with Mr. Smith, there was a great deal of interchange throughout the presentation and Major Quante and Mr. Smith were to mesh their ideas and incorporate the suggestions of the other members of the subgroup. See Appendix G.

Dr. Brian Shaw, Director of the Center for Environmental Security of Pacific Northwest National Laboratory next presented the topic "Environmental Characterization." See Appendix H. He noted that his presentation built upon the work of Mr. Smith and Major Quante because it is necessary to understand the security setting before discussing the environmental context. Dr. Shaw addressed the issues

of how to define and quantify the environment and the envi - ronmental context of Preventive Defense including tension reduction and confidence building. He also



reviewed characterization as the basis of risk analysis, risk assessment, and the types of risk analysis. Dr. Shaw identified NATO key issues including: environmental security issues requiring cooperative decision-making, and the requirement for proactive characterization, risk assessment, and management (Preventive Defense). Throughout the presentation, there was a lively dialogue with one attendee commenting that the Pilot Study needed to concentrate on Natural Resources and also to look at air and water pollution, the effects of industrial and natural accidents, and at global problems like the "Greenhouse Effect." One cochair noted that the Subgroup is still discussing methodology and building on the paradigm presented by Mr. Smith. An attendee noted that we needed to provide stratification and one way might be to consider the security implications of (1) a gradual buildup of environmental degradation, (2) disasters (Chernobyl), (3)

development plans (i.e., nuclear power plants), (4) resource exploitation (fisheries), and (5) Ozone - compliance and noncompliance with ozone restrictions (i.e., smuggling). Another attendee pointed out that we must also establish "null sets," i.e., issues that are not important, and that there needs to be a management scheme to deal with these issues. Another comment dealt with the need for a response strategy and an understanding of how NATO deals with these issues. It was then noted that the Terms of Reference (TOR) for the Pilot Study do not confine the study just to NATO. A study group member questioned whether the study would go beyond the CCMS TOR? It was also stated as a matter of course that the Pilot Study will regard the CCMS TOR.

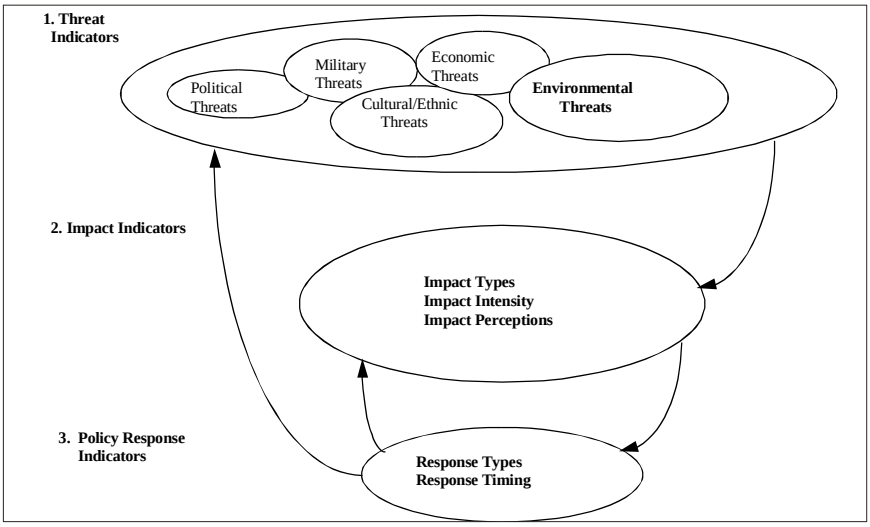
Prior to the final presentation of Subgroup One, co-chair Vest asked if there were any changes to the minutes of the Subgroup Meeting held in January in Washington. There were no objections to the minutes as prepared, and they were accepted unanimously. See Appendix D.

The final presentation of Subgroup One was made by Kerstin Imbusch from Ecologic. The presentation was entitled "Elaboration Criteria for Assessing the Security Risks Associated with Environmental Problems." See Appendix I. The purpose of the presentation was to elaborate on the contextual relationship between environmental stress and secondary social problems and to frame work conditions. It was noted that environmental problems could also manifest themselves as economic problem. There was extensive discussion about how to portray a model that clearly presented the relationship between environmental problems and scarcity on the one hand with their interlocking cause and effect with secondary social problems on the other, and with each having the potential to lead to serious conflict. It was noted that in the Ankara meeting "serious conflict" had

been depicted as a pyramid with conflict on the top and grievances and threats as lower tiers. It was agreed to incorporate this paradigm in the model. There was also lively discussion about framework or "nurturing" conditions and also what these were and how they were to be identified. Knowledge, for instance, was felt to also include the concept of "intellectual potential." It was agreed that all who had an interest in reworking the conceptual paradigm should meet and report back to the Plenary Session on May 20th.

Subgroup Two - Definition and Data Base Development

Mr. Vest chaired the Subgroup Two session. Dr. Bert Spector of the Center for Negotiation Analysis discussed the work of Subgroup Two. See Appendix J. Subgroup Two had three objectives: to collect data on a sample of environmental threats, to identify early warning indicators, and to design decision support systems. He noted that there was a need to determine a methodology to communicate between Subgroups and to integrate the activities of the Subgroups. Dr. Spector commented that there were three or perhaps four categories of threat indicators and presented a graphic from Annex J which depicted these indicators. There was much discussion about how to portray the information and what to include and he agreed to rework the slide and to present it at the subgroup report out. Data bases were then discussed and one participant asked from whence to get the data. It was agreed that there was not time to develop primary data and that there should be a sample. It was noted there might be some difficulty in precisely defining selection data and in collecting it. It was also pointed out that not all indicators were recognized and thus one would never be able to collect all data. It was suggested to align data collection with the Commission for Sustainable



Growth Indicators "Blue Book" as a useful approach. Another participant recommended that in regard to decision support systems an examination should be made of the early warning systems on the political side. At the conclusion of the presentation, Mr. Vest asked the members of the group to consider assuming the chairmanship or co-chairmanship of Subgroup Two. Mr. Vest also noted that Subgroup 2 was seeking to widen the participation in the subgroup to include as many participating countries as were interested.

Subgroup Three - Policy Responses

This Subgroup was chaired by Mr. Lietzmann. He noted that the question for inquiry were contained in Attachment "6" to the Subgroup One Meeting Minutes (Appendix D). Mr. Alexander Carius from Ecologic made a presentation on Policy Responses. See Appendix K. The major thrust of the presentation was to focus on environmental issues that impact on international security (transboundary). A participant noted that an environmental issue becomes a

security issue when it goes from being an environmental issue to a political problem. It was also noted that environmental problems could under some circumstances enhance security. Another participant noted that the presentation depicted the world as we would like to see it but that it was far from a focus on NATO. The importance of Confidence Building was also highlighted. The chair noted that an important message is that environmental policy works to prevent conflict. The security community must become aware of the fact that environmental problems can lead to conflict. The environment must be taken into account in security scenarios.

CHAPTER III
INITIAL PLENARY SESSION

Welcoming Remarks.

The plenary session opened with welcoming remarks by Major General Richard Chilcoat, Commandant of the U.S. Army War College, who noted that environmental security was an important topic for study at all U.S. War Colleges. This conference provided an excellent opportunity for the faculty of the War College to enhance its expertise in this key area. He would be watching with interest the work done by the group on environmental security and he was pleased that the U.S. Army War College was able to host and participate in the important work of this Pilot Study Group. Rear Admiral Thomas Fox from the Pacific Northwest National Laboratory then welcomed the group. He pointed out that environmental security was an elusive topic but that it was important to regional security. He was sure that the meeting would be fruitful and productive. Mr. Vest next welcomed the group and emphasized that he was pleased to be at the Army War College and to have the opportunity to use the modern facilities of Collins Hall to continue the important work of the Pilot Study. Mr. Lietzmann thanked the Army War College for welcoming the group and for providing the use of its facilities. He noted that this was an excellent venue to bring together elements of the environmental community and the military community to study a common problem - environmental security.

Old Business.

Mr. Vest then reviewed the agenda and asked if the agenda as portrayed was acceptable to the group. He

reminded them that this was their meeting and that the agenda would be changed to accommodate their interests and needs. The co-chair also noted that perhaps they could integrate the concepts developed during the meeting into other conferences around the world. He encouraged wider future participation in the Pilot Study and its subgroups and also noted that there were several leadership roles available and he encouraged the group to consider accepting one. Mr. Lietzmann then reviewed events since Pilot Study Meeting Two in Ankara, which had organized the Pilot Study work and created three subgroups. Subgroup 1 had met in January and Subgroups 2 and 3 were meeting for the first time here in Carlisle. The work of Subgroup 1 is a precursor for Subgroups 2 and 3. The Ankara meeting had also decided to encourage wider participation and in this regard, a questionnaire had been sent out seeking substantial contributions. These had not been forthcoming. Mr. Lietzmann reminded the group that participation in the Pilot Study was a means to debate and to negotiate; it is a means to contribute to the results. The minutes of the Ankara meeting were then approved as submitted. Appendix L.

Opening Statements.

Mr. Vest then requested opening statements from the group. Dr. Irene Freundenschuss-Reichl stated that Austria would be pleased to participate in Subgroup 3. Professor Bedrich Moldan declared that the Czech Republic would participate in Subgroup 2 and that he was willing to co-chair the subgroup. A Turkish representative observed that there was ambition in terms of the speed of the deadline for the Pilot Study; perhaps we should prolong the deadline. He further noted that the contents were also ambitious as they encompassed global aspects; the group

might lose sight of the immediate security context of NATO. Mr. Lietzmann noted that research on environmental security and security leads in two directions. Environmental negotiations on an international level lead to negotiations on security. Also, security policy should also include environmental elements. A goal is to move environmental issues higher on the security agenda. The security community goes beyond NATO and most areas where the environment has caused serious conflict are outside NATO. CCMS provides the right forum for discussion as regards the aim of the Pilot Study to analyze the relationship between the environment and security. The main aim of the Pilot Study is not to develop specific NATO related policy decisions but to provide a right forum for discussions. Some results of discussions will be prepared; but we must keep in mind the mandates of CCMS and NATO. It should also be noted that NATO is a developing and growing community. NATO's CCMS is not often connected efficiently with other organizations. The Pilot Study may propose an international forum to present its intermediate report. Mr. Vest mentioned an effort of the U.S. Defense Department to organize a joint international "Workshop on Military Activities and the Environment," sponsored by Sweden and the United States of America and hosted by Poland. This workshop, to be held in early 1998, also provides a European forum to exchange early results and to integrate preliminary outcomes of our Pilot Study into the European discourse.

New Business.

ECHS[1]

Mr. Brian Smith presented an update on the Environmental Clearing House System (ECHS) web site which is maintained by the Institute for Defense Analysis. The ECHS provides a modality to share information and ideas among all members of the Pilot Study. The major change to ECHS since it was first introduced at Ankara is the addition of a "Draft Documents" section. To view this portion of the web site, the user identification is SECURITY and the password is ENVIRON. One participant wanted to know how to add documents to the site and was informed that they should be sent to Brian Smith who would ensure that they were added. Mr. Vest noted that the internet was an efficient method to conduct business and that the preparations between the United States and Sweden for the upcoming conference in Poland had all been done without face to face meetings.

Subgroup One

Mr. Smith then reported on the results of the Subgroup 1 meeting the previous day. The subgroup was responsible for three broad areas: the NATO Security Context, Environmental Characterization, and Security Context Assessment. During the Subgroup meeting on May 19th, Mr. Smith had discussed the NATO Security Border Assessment and the tenets of the 1991 NATO Security

1 See Internet site http://echs.ida.org

Concept. Major Quante then followed and presented further elaboration on a new NATO Security Concept. Mr. Smith stated that his presentation and Major Quante's would be woven together into one document (Appendix G). The additions and comments made at the subgroup meeting will also be incorporated into the final document. Dr. Shaw had addressed the issues of how to define and quantify the environment and the environmental context of Preventive Defense including tension reduction and confidence building. Mr. Smith then presented the result of a collective effort to refine the model of Ms Imbusch. There was a lively discussion of the model and it was determined that "secondary problems" which had been a component of the earlier model had been eliminated in this version and should be reinstated. There was again discussion about the terms "nurturing agents" and "filters" and their meaning and how they should be incorporated into the model. There was discussion on the use of the term "public" and the concept of "state of public participation." There were additional comments on the relationship between the terms "political system" and "public participation." In terms of the "filters" there are many, such as political stability, cultural and ethnic, socio-economic, institutional, technological, and managerial conditions, to cite just a few. The importance of the judicial system was also commented on. The subgroup was directed to review all these comments and any others they were provided and to deliberate and refine the model and report back on May 22nd. (See Chapter VI)

Subgroup Two

Dr. Spector reported on the May 19 Subgroup 2 meeting. Agreements include Subgroups One and Two working together to integrate concepts, especially environmental

threats and a security assessment framework, and to reconcile these with the indicators and data base. Indicators will draw heavily on existing work to include the Commission for Sustainable Development. Subgroup Two also needs to develop indicators related to early warning, especially as they relate to preventive defense. In terms of data bases, three types need to be considered: (1) indicators which key on countries or regions over time to determine trends and thresholds; (2) a focus on historical cases with a representative sample for comparative analysis; and (3) regimes in order to gather information on structural procedures and institutions in the regimes which can be drawn upon to help in conflict resolution. It was asked whether there was some overlap in this regard between Subgroup Three and Subgroup Two. A Subgroup Three representative stated that there was no duplication and no overlap. Subgroup Three may describe what needs to be collected but it will not collect data. One participant noted that what was needed is to make a data base of data bases. Another member noted that Subgroup Two should keep the number of indicators and data bases small. It is hard to develop definition and comparability. We should not look at regimes, not because this was an invalid approach but because of the logistics of the problem. It was also noted that it is necessary to know what exists in other fora. Another participant pointed out that we must use all sources of information to include intelligence. Dr. Spector also discussed decision support tools. Their function is to provide early warning to support policy makers. We need to employ what has been learned about decision support tools for military decision makers. The outline for the final report must be sensitive to the needs of policy makers. Need to start with decision criteria and how they are perceived. From decision criteria we then need to translate them into security indicators and lastly review their practicality. We must present a realistic picture of

what can be done and how the data bases can be maintained. As a part of the overall work of Subgroup Two, we need to involve key researchers and to gain access to them. Also, an interim meeting of Subgroup Two is needed in the fall and a tentative venue of Prague is being discussed.

Subgroup 3.

Mr. Carius reported on the work of Subgroup Three. See Appendix M. He reviewed their work on assessment of environmental security threats and policy responses for preventing environmentally induced serious conflicts. He also asked for participation from other nations and for a co-chair for Subgroup Three. There was a comment made to change "international" to "global" on page 4 of Appendix M and also to note that "new international institutions" was a question to be explored and not a statement of fact. Another comment concerned the real difficulty in separating development policy and environmental policy and that one must keep in mind the principles of sustainable development. Also, on page 3 the word stabilize should be changed perhaps to improve or ameliorate. Another comment concerning the question of "new international institutions" was that we need to strengthen existing institutions rather than develop new ones. A co-chair noted that there was a great deal of interest in looking at the efficiency of current institutions, perhaps to concentrate forces at the global level. A final comment on this topic urged the group to keep open the option on new institutions and to look at the idea of an environmental council like the security council as a part of the UN. Dr. Freudenschuss-Reichl was declared a co-chair in Subgroup Three and she is responsible for the development of Environmental Policy response strategies.

CHAPTER IV
PANEL SESSION I - ENVIRONMENTAL SECURITY AS A COMPONENT OF PREVENTIVE DEFENSE.

Mr. Vest introduced this panel which would look at this topic from the perspective of the United States. The strategy of Preventive Defense is built on the premise that defense establishments have an important role to play in building democracy, trust and understanding. Defense environmental cooperation can support this essential component of our national strategy. Indeed, the Secretary of Defense himself has stated, “Our defense environmental programs are becoming another important tool in which to engage the militaries of new democracies. In doing so, we can make a small contribution to a better global environment; and have a positive influence on their approach to defense and the way they manage resources." Today DOD engages in defense environmental cooperation with Russia, Poland, Hungary, the Czech Republic, Australia, Sweden, and many NATO nations. DOD has also integrated defense environmental cooperation into its regional strategies for Europe, Asia--Pacific, and the Western Hemisphere.

Beyond cooperation with other militaries, it is becoming increasingly clear that environmental degradation and scarcity play a key role in the causes of conflict and instability in the post--Cold War world. That is why for the first time, the National Security Strategy recognizes that problems such as environmental degradation and natural resource depletion pose threats to U.S. prosperity and security. Thus DOD now works with other agencies of the U.S. government to improve our understanding of these

potential causes of conflict and instability and to create mechanisms to provide adequate warning of future crises.

The DOD has environmental responsibilities and activities around the world. Military to military environmental security relationships can be very effective in enhancing the overall relationship between the United States and other nations, while at the same time contributing to overall environmental quality of life. For many years, the DOD has been using good environmental practices in its operations throughout the world. DOD has produced the World Wide Overseas Environmental Baseline Document as the basic guideline for overseas environmental performance while specific practices are worked out with the host countries. Additionally, in countries where the U.S. has bases, the DOD has prepared Final Governing Standards to serve as the basis for all environmental programs in that country. DOD's global Environmental Security efforts are aligned with the unified command areas of responsibility (AOR). Comprehensive Environmental Security Strategies are under development for EUCOM, PACOM, and SOUTHCOM. This overseas environmental program coupled with over 25 years of extensive environmental experience in the United States, allows the DOD to employ *Environmental Security as an effective tool in military to military relationships* and to support the Preventive Defense strategy.

Of particular interest is the interagency approach that the Unites States was taking in dealing with international environmental security issues. He noted that the Department of Defense, the Environmental Protection Agency, and the Department of Energy, in consultation with the Department of State had signed an interagency "Memorandum of Understanding Concerning Cooperation on Environmental Security" on July 3, 1996.

The Environmental Security as a Component of Preventive Defense panel was chaired by Ms Sherri Goodman, Deputy Under Secretary of Defense (Environmental Security), and included Mr. Jonathan Margolis, U.S. Department of State, Ms Elizabeth Campbell, U.S. Department of Energy, Mr. Alan Hecht, U.S. Environmental Protection Agency, and Dr. Kent Butts, Center for Strategic Leadership, U.S. Army War College.

Ms Goodman discussed Environmental Security and how U.S. Department of Defense environmental programs contribute to Environmental Security and to the military mission of U.S. armed forces.

"It is a pleasure to moderate this panel today. I would like to frame the discussion for the panel by talking a bit about the concept of Environmental Security and how the Defense Department environment program contributes to the military mission.

"At the Army War College students come to develop strategic leadership skills today that will prepare them to face tomorrow's national security challenges. Today, here at the Army War College, we are embarking on this process with our colleagues from abroad.

"It is becoming increasingly clear to policy makers, scientists and scholars that environmental conditions have been and will continue to be important to U.S. national security interests, and a factor in conflicts throughout the world.

"In the United States, the Clinton Administration has recognized this fact, and now, environment is an important element of our national security policies. In his 1996 State

of the Union Address, President Clinton described environmental degradation as a threat. The leadership within the Administration speaks in a unified voice on this matter. In 1996, America's top leaders from the Defense Department, Central Intelligence Agency, Environmental Protection Agency and State Department all gave major speeches on this subject.

"Secretary of State Albright put it succinctly in her Earth Day remarks on April 22. She said '...a lack of environmentally sound development can entrap whole nations within a cycle of deepening poverty, disease and suffering. There is nothing more destabilizing to a region than to have as a neighbor a society so depleted of resources that its people have lost not only faith, but hope.'

"Environmental security is a part of a revolutionary new defense strategy called 'preventive defense.' The term was coined by former--Secretary of Defense Perry. In Dr. Perry's words, with preventive defense we can 'promote trust, stability, and democratic reform, and so help to prevent the conditions for conflict and build the conditions for peace.'

"For preventive defense to succeed we must address the increasingly diverse threats to our security in the post--Cold War world. Understanding the causes of conflict and instability, providing adequate warning of potential crises, and acting well before a crises to avoid costly military interventions are at the heart of preventive defense. In the words of the founder of the Army War College, Elihu Root, 'Not to promote war, but to preserve peace.' This is the essence of preventive defense. The role of environmental degradation and scarcity in causing conflict is the subject of a lively debate in the academic and national security

communities. We have been engaged in a process of learning how environment maybe a factor in conflict. Despite the lack of consensus about these issues, it is clear that resource abuse and related conditions may contribute significantly to instability around the world.

"I would like to quote my Marine Corps colleague Lieutenant General Anthony Zinni who speaks eloquently about the role of environmental factors to the military mission. 'I think for any military person looking at operations, you have to see that environmental factors will effect you in several ways. First of all, more and more they are becoming principal, or contributing causes leading to conflict. There will be water wars, I guarantee it. We can see that in some areas we go into as water sources are depleted and/or polluted and population, demands grow. As rain forests are depleted and arable lands are exhausted, urbanization takes place. As people come to the cities, and third world cities especially cannot handle this massive growth, they become hotbeds for violence and conflict. Where regional instabilities or U.S. interests are involved, we engage.'

"The type of military operation in which our troops are involved today is what we call 'operations other than war,' such as peacekeeping in Bosnia, humanitarian relief in Rwanda, and natural disaster relief in our own country, from floods to fires. Environment is a factor in these operations. Twenty--five years ago the U.S. military didn't know very much about environmental protection, or about the effects our activities were having on the environment. We have come a long way in 25 years. Today, the U.S. has one of the most diverse environmental programs in the world. Our military plays an important role in protecting the environment, not only in the day to day operations and training

activities, but also in the planning and execution of military operations.

"In fact, environmental considerations are recognized as essential, and I quote Secretary of Defense William Cohen, '...environmental protection is critical to the Defense Department mission and environmental considerations shall be integrated into all defense activities.' DOD's Environmental Security program is responsible for protecting and maintaining access to land, sea and air. This involves managing the natural resources under our jurisdiction, cleaning up sites that have been contaminated in the past, developing programs and technologies to prevent pollution from the outset, protecting the safety and health of our troops, and complying with the law. Today our military is lean, mean and green.

"Our programs allow us to make a small contribution to a better environment. They are also a tool for international cooperation. By sharing our expertise we can have a positive influence on the way our military counterparts around the world approach defense and environment. As an example, in September 1996, the Secretary of Defense signed a unique declaration with the Defense Ministers of Norway and Russia on Arctic Military Environmental Cooperation (AMEC) in which the three nations' forces will work together to ensure that their military activities do not harm the Arctic environment. Under AMEC, Russia, Norway, and the U.S. are undertaking projects on safe handling and storage of radioactive materials, the proper disposal of contaminated materials, and the exchange of information on risk assessments and cleanup technologies and methods. The world we live in has become completely interdependent. Our economies, food supplies and environment are globally intertwined. Environmental problems can not be

solved in isolation from our friends and neighbors around the globe. As we move towards the 21st century, environmental policies are likely to be determined by international standards of conduct. The programs and policies we develop today should lay the groundwork for the kind of cooperation and communication that will be required to solve our environmental challenges in a meaningful way."

Mr. Jonathan Margolis reviewed Department of State activities in support of Environmental Diplomacy.

"With the end of the Cold War, definitions of the United States' strategic interests have changed. Our foreign policy must now address a broad range of threats -- including damage to the world's environment -- that have not been included in the traditional litany of security threats but which nonetheless require our urgent attention in our own interest. No single country is responsible for these problems. Many nations have contributed to their causes, and they can be addressed effectively only if the nations of the world work together, adopting and implementing policies that are result oriented.

"There is a some debate within academia and the U.S. Government over the definition of environmental security. In some views, the term refers to the idea that environmental degradation can produce conflicts, mass migrations and ultimately war. Under this definition, efforts at protecting the international environment are justified as reducing the likelihood of migration and war.

"In its recently released first annual Environmental Diplomacy report, the State Department has taken a different view of the subject, namely that international environmental issues have wide--ranging political, economic, and

social implications, and therefore, increasingly are and should be an integral part of the conduct of foreign policy. We are concerned that our regional efforts to promote democracy, free trade, and stability throughout the world will fall short unless people have a livable environment. In this outlook, we distinguish between two types of environmental issues: global issues and regional issues.

"Global environmental issues such as the build up of greenhouse gases, the destruction of forests, the degradation of the oceans, the loss of biodiversity, or the release of chemical pollutants can threaten the health and livelihood of U.S. citizens, and our interests abroad, regardless of the geographic origin of the threats. For example, toxic chemicals long banned in the United States but in use elsewhere in the world can be found contaminating the soil and water in several areas of the U.S. Climate change could cause shifts in patterns of U.S. agricultural productivity, damage to coastal homes and businesses, higher disease incidence, and an increase in severity and frequency of storms. Ocean degradation, whether through overfishing or increased pollution, reduces fish stocks and deprives thousands of Americans of their livelihoods.

"We have made many important advances on these issues, including agreements to phase out the remaining substances that damage the stratospheric ozone layer and to ban ocean dumping of low--level radioactive waste. Other opportunities for further progress this year include the conference on the UN Framework Convention on Climate Change which will be held in Kyoto, Japan this December, where we will be pressing for a substantive agreement to reduce greenhouse gas emissions. We approach each of these multilateral negotiations as affecting our national security interests in the broadest sense.

"Regional environmental issues also pose challenges to our security interests and foreign policy. Governments, especially in the developing world, face difficult challenges of providing sufficient water and energy resources, ensuring air quality , and balancing the impacts of land use decisions and urban and industrial growth. Some of these problems can be addressed by one country, others are transboundary and can exacerbate existing tensions. The ability of governments to address these problems has implications for their internal political and economic stability, for the economic and political stability of their region, and by extension, for U.S. foreign policy.

"Our regional strategy also includes the establishment of regional environmental hubs in key embassies to work on transboundary solutions to environmental problems. While the hubs all share a common approach of helping neighboring nations work together, each will address the priority environmental problems specific to its region.

- San Jose, Costa Rica, the Central America and Caribbean hub, will focus on the loss of forests and biological diversity, and on the management of coral reefs and coastlines;
- Tashkent, Uzbekistan, the Central Asian hub, will work to encourage cooperation on water related problems in the Aral Sea Basin;
- Addis Ababa, Ethiopia, the Eastern Africa hub, will address desertification, Biodiversity loss, and water use;
- Kathmandu, Nepal, the South Asia hub, will promote regional cooperation on alternative energy, clean air, water sharing, and environmental disaster preparedness,
- Amman, Jordan, the Middle Asset hub, will work on water resources, desertification and coral reefs in the Gulf of Aquaba as part of the Middle East peace process; and

- Bangkok, Thailand, the Southeast Asian hub, will create initiatives to promote the sustainable management of forest and marine resources.

"By promoting regional cooperation on transboundary environmental issues, we will help countries reduce sources of tension that could otherwise undermine their stability and security and, by extension, our own.

"Naturally, the State Department cannot do all of this alone. We must rely on partnerships at three levels in order to fully integrate environmental issues into the mainstream of our foreign policy.

"Within the U.S. government, we count on the support and collaboration of other agencies notably the Department of Defense and Energy, and the Environmental Protection Agency, who have undertaken to work together collaboratively on behalf of U.S. environmental security . Whereas the State Department is best placed to assess the foreign policy ramifications of our environmental policies, it is only through the technical expertise and advice of other agencies that we are able to jointly carry out those policies. It is vital that all government agencies with a stake in international environmental security activities -- foreign policy agencies and technical agencies -- coordinate closely to ensure that the U.S. takes a unified approach to this complex and important area.

"A second required partnership, of course, is with key countries around the world to address global, regional, and bilateral environmental problems. Through bilateral commissions and common agendas, we are expanding the focus on environmental issues in our relationships with Brazil, India, Japan, China, Russia, Ukraine, the European Union, Mexico, South Africa and Egypt. These bilateral

frameworks allow us to coordinate our efforts and to develop joint initiatives with allies on environmental problems.

"The third partnership that we require in order to carry out environmental diplomacy is with the America public. In a democracy, as you all know so well, there must be public support for public policies, including even those which may seem to the average citizen to be far removed from everyday concerns. Through a dedicated and growing program of public outreach, we are actively promoting our vision of environmental diplomacy with U.S. nongovernmental organizations, U.S. businesses, and ordinary citizens. Where it is feasible, we promote active public--private partnership in cosponsoring environmental activities around the world. And we seek to explain and build support for our environmental diplomacy efforts with the American public by showing that environmental problems worldwide can affect the quality of life here at home.

"The ability of individual nations and regions to provide clean air, water, and energy for their citizens is critical to maintaining stability and growth. The decisions the world makes about reducing greenhouse gases, conserving forests, and limiting the use of toxic chemicals are shaping the planet today and for future generations. Environmental Diplomacy is the in--place foreign policy tool to address these global and regional challenges."

Mr. Alan Hecht discussed the role of the Environmental Protection Agency and other agencies in foreign affairs and foreign policy.

"The United States Government definition of National Security has changed. As stated in the just published A National Security Strategy for a New Century, 1997:

'Decisions today regarding the environment and natural resources can affect our security for generations; consequently, our national security planning is incorporating environmental analysis as never before. In addition, we have a full diplomatic agenda, working unilaterally, regionally and multilateral to forge agreements to protect the global environment.'

"This changing definition recognizes that the Environmental Protection Agency and other agencies have a role to play in implementing national security. This recognition breaks new ground in government management. I ask each of you to think how often your equivalent EPA, DOD, and DOE and Department of State have opportunities to work together in constructive ways.

"For the EPA, environmental security is a process whereby the solutions to environmental problems contribute to national security objectives. Elements of this process include: environmental engagement, technical assistance, sound environmental investment, training, promoting the rule of law and public transparency and management capacity--building.

"We have set a mission for ourselves:

'The EPA will work with other key agencies to minimize environmental conditions or trends involving other countries that may over time have significant negative impacts on U.S. security and other related nations interests. The EPA will develop and implement a program to identify,

analyze, prioritize, and support U.S. Government efforts to manage these international environmental threats before they pose a greater risk to the nation's environment and security.'

"This mission statement is similar to Secretary Cohen's objective for the Department of Defense to "shape the future." There is an important underlying theme to EPA's mission statement and to the Secretary's goal of shaping the future: leadership. The U.S. through these initiatives and through the efforts of the State Department in environmental diplomacy is showing international leadership in the area of environmental security. Our efforts, however, would not be successful without our international partners. EPA's goal for the future is to increase our partnership with other governments to collectively address issues of environmental security.

"Environmental security is often focused on global concerns such as climate change, dsertification and bioiversity loss and competition for natural resources. The EPA is focusing on additional issues, including:

- Resolving regional and transboundary environmental issues; such as in the Middle East or Africa;

- Addressing environmental problems resulting from the legacy of the cold war, such as in the Baltics or in Northwest Russia;

- Integrating the goals of arms reduction and environmentally sound management of nuclear, chemical and biological waste: such as our efforts in Murmansk;

- Influencing future economic development and reducing transboundary or regional pollution: such as Northwest Russia, Arctic, Central Asia, and China

- Addressing areas of major health and environmental degradation: such as Africa; and

- Preparing for problems 'Beyond the Horizon' by establishing institutions, mechanisms and methodologies for future analysis.

"Incorporating environmental considerations in 'gaming' is another recognition of the link between environment and security.

"Concurrent with EPA and U.S. efforts, we see five important international trends in addressing environmental security issues:

-- Growing use of environmental diplomacy, such as the State Department Hubs which Jonathan Margolis described, as a means of establishing cooperation among nations;

-- Growing number of non--military regional cooperation: such as the Barents Council, CUNCAUS (Central America)

-- Regional cooperation growing into inter--regional cooperation: Such cooperation has given rise to a new numeral terminology such as 5+3, 7+1;

-- Leveraging of resources: the important role of partnership between and among EU, Norway, Sweden, US, France, Germany, Japan.

-- Military to Military cooperation; such as AMEC and Military-Civilian cooperation such as projects within AMEC.

"All of the above are contribute to promoting preventive defense and democracy and ensuring that environmental issues do not become a source of conflict between nations."

Ms Elizabeth Campbell then shared the Department of Energy perspective on the opportunities and challenges in dealing with environmental security issues.

"Thank you for the opportunity to be at this conference on Environment and Security in an International Context. It is exciting to see the serious consideration of this topic in a specific and strategic sense.

"In recent decades we have all come to understand that the health and well-being of peoples and nations rests upon the health and well-being of the physical environment in which we live and that serious stresses imposed upon that environment will sooner or later become stresses and limi - tations to our own lives and national interests. In the same manner that we understand those facts, we also under- stand that not all environmental problems can be addressed simultaneously or equally. In a world of resource constraints and other worthy components of sustainable development, it is appropriate to search for ways to identify priorities among environmental interagency mandates, missions, and resources in areas of shared interest. It is be - coming a mechanism for partnerships between the U.S. agencies and international partners to address jointly ma - jor environmental security concerns.

"Let me share with you the Department of Energy's perspective on the opportunities and challenges of our partnership in the MOU. To understand that perspective it is useful to review the composition of the Department and its four primary responsibilities. The Department of Energy manages a major portion of the Nation's federally funded civilian science, technology development, and engineering resources. It consists of 9 major multi-program laboratories (example, Los Alamos National Laboratory), 10 special purpose laboratories (example, National Renewable Energy Laboratory), 11 smaller special-mission laboratories (example, Institute of Toxicology and Environmental Health), and a wide range of unique facilities critical to U.S. industry's global competitiveness and/or national security (example, the Strategic Petroleum Reserve). DOE's responsibilities are identified under the headings National Security, Environmental Quality, Energy Resources, and Science and Technology.

"National Security: For almost 50 years, nuclear weapons have been an important part of the U.S. approach to national security. The nation continues to rely on its nuclear deterrent, including nuclear powered warships. The Department of Energy stockpiles, maintains, and dismantles nuclear weapons and provides nuclear propulsion plants to the U.S. Navy. The end of the Cold War has provided the opportunity to redirect some resources to other missions. Chief among these is reducing continuing and new nuclear dangers at home and abroad with programs that build upon the strengths of the DOE complex and the national laboratories.

"Environmental Quality: The principal environmental quality objective of DOE is to eliminate the risks and imminent threats posed by past activities of the

department and its predecessor agencies, primarily nuclear weapons production. We are the nation's holder of spent nuclear fuel, transuranic waste, uranium mill tailings, and various combinations of radioactive waste and hazardous waste. Consequently we are engaged in extensive development and demonstration of technologies to manage these wastes. Obviously we also need to minimize and prevent risk and pollution from ongoing departmental activities and we work hard to develop safer, cleaner practices.

"Energy Resources: The Department is the focus for Administration initiatives to develop new, clean, renewable energy sources that cost less and preserve the environment. The Department encourages energy efficient technologies and practices, reduced vulnerability to supply disruptions, and minimal impacts of energy use on the environment while keeping energy bills affordable.

"Science and Technology: The key to each of the earlier missions and most certainly to their simultaneous fulfillment is first-class basic and applied science and world-class technology. The national laboratories and their partnerships with U.S. and international universities, academies, research institutions, and businesses are the core of this part of the Department's mission.

"The Department believes that it has the tools and resources developed through these missions which are relevant to the initiative for Environmental Security. We believe that the most effective way to support the initiative is with partnerships: partnerships between DOE and its laboratories, between the federal agencies in the MOU, and partnerships between the U.S. and other nations and international institutions with similar concerns.

"Within the Department we have developed a framework connecting the program offices and laboratories and providing guidance on DOE interactions with the MOU partners, foreign governments, and other interested parties. We anticipate working with others on the basis of 'joint action plans' developed prior to full involvement.

"We have identified possible DOE program contributions, including: safe handling, transport, and storage of nuclear and chemical waste; nuclear reactor operational safety assessments and training for worker health and safety; radiological, biological, and environmental research surveillance and monitoring methods; sustainable development models and research for land and water; climate change; oil and gas resource development, transport, storage; utilization of electric power generation and facility; retrofitting emissions controls and efficiency factors for power plants; more efficient building and transportation sector choices; renewable energy development techniques through problem assessment and characterization, data exchange, planning, and computer modeling. The Department has access to and is accustomed to working with the U.S. private sector financial institutions to deploy these capabilities.

"There are challenges accompanying these opportunities. We have ongoing major commitments within the Department and definite resource constraints, both in the amount of money appropriated to us and in the authorizing and appropriating language. Consequently we will want to develop the necessary joint action plans within recognized and valued partnerships consistent with our missions, mandate, and available resources. But many of these partnerships exist; they have been used already or are being used now. Let me mention a few before closing.

"The Arctic Military Environmental Cooperation Effort (AMEC), mentioned by Ms. Goodman, is an example under the category of improving handling, transport, and storage of nuclear materials. This activity will serve as a template for possible future efforts. Another example is the Paldiski site in Estonia where the Department participated in investigating and stabilizing a former Soviet nuclear navy propulsion training center on the Baltic Sea.

"An example under the category of nuclear safety, our most extensive activity at present, is the effort to improve the safety of Soviet-designed civilian reactors — built like the Chernobyl reactor — located in Russia, Eastern Europe, and Lithuania. Our goal is to improve the operating safety of these reactors. The implications of such problems for national security and strategic partnerships is certainly one legitimate way to set priorities. After all, it is entirely appropriate that we take actions which protect national interests and assist in the development of forward-looking national capabilities around the world.

"You are aware of the major interagency environmental security initiative undertaken by the Department of Defense, the Environmental Protection Agency, and the Department of Energy, in consultation with the Department of State. It resulted in the signing of the interagency 'Memorandum of Understanding Concerning Cooperation on Environmental Security' on July 3, 1996. The initiative directly links resolving environmental issues with international security concerns to encourage international stability, sustainable development, and the establishment of democratic processes abroad. It also provides an opportunity to advance U.S. energy and national security interests linked to U.S. environmental security concerns. The MOU effectively pools current resources. But what will

be the directions for further activities and new MOU partnerships? How should MOU partners identify appropriate environmental projects? The opportunity at this conference to consider the combination of strategic concerns and environmental challenges should contribute to the answer. The partners will be interested in hearing your thoughts."

Dr. Kent Butts, the concluding speaker, addressed the topic of "Civil-Military Cooperation on the Environment."

"What we have seen in the panel thus far, is that those United States government organizations most appropriately involved in promoting civil-military cooperation have developed a relatively common focus in executing their mission. When they discuss the opportunities for the United States to work with another country, they ask certain questions about appropriateness. Certain variables must be present if the program is to be undertaken and successful. Similarly, when other countries consider civil-military cooperation on the environment, they should ask certain common questions about its appropriateness. I will address some of those questions today.

"Before I raise these questions, I want to point out that the model used to teach strategy at the Army War College has three components: Ends, Ways, and Means. A successful strategy identifies the desired end state, a concept for reaching that end state, and the most often overlooked question, what resources are required. If we want to see environmental improvement and minimize environmental threats to security, then we need to provide the necessary resources. When they are not available, it is often advisable to bring in the military to cooperate with civil authorities. When is it appropriate to do so?

"When National security is threatened internally. Internal environmental threats may be too large or technically daunting to be handled by local authorities; then the military may become involved. In the United States, for example, the Department of Defense spent over fifty million dollars on environmental improvement for the Chesapeake Bay, in large measure because it had unique capabilities. Local authorities did not have the large Cray computers that could do waterflow modeling; the Department of Defense did. Many militaries around the world have the only available technical resources that can be used to resolve important internal environmental problems.

"Reducing regional tensions and as confidence building measures. Both of these concepts have been elaborated here at this conference and are often powerful reasons why the civil authority may turn to the military and ask for their help on a given issue. What are the keys to this cooperation? One is to recognize cultural and organizational differences. We in the United States have difficulty doing this. Our enthnocenticity often causes us to see the world through our own cultural imperatives. We fail to ask how it is done in the other country, or region. This problem often exists among organizations as well. When working with another country, ask how they approach the same problem. What approach will work best given the actors involved. If there is a commonly shared waterway issue, understand first, how the other country is organized to deal with this environmental problem. Do they, for example, call in the military to help with these problems or not? If not, then you cannot expect your military to work with their military to solve the problem.

"When attempting to promote civil-military cooperation on the environment, it is important to understand the

organizational and cultural differences between your organization and your counterparts. Practice interest based cooperation and negotiations to determine the objectives you share in common in solving this problem. If there is a Ministry of Foreign Affairs, Ministry of the Environment and Ministry of Defense, typically all would like to see the environmental issue addressed in a way that furthers their organizational objectives, but their capabilities vary widely. Hold negotiations to determine what must be offered to get the organization with the technical capabilities to work with you to make that cooperation possible.

"Regardless of how favorable a cooperation agreement you may negotiate, success will turn on the commitment of leadership. Countries that have been successful in using the military to address environmental security problems have had the commitment of their leadership. When success is not achieved, all too often one can go back and identify the lack of commitment on the part of leadership. Thus, when planning how to use military-civil cooperation to achieve environmental objectives, identify which leaders must be brought on board, and whose commitment must you have.

"The final key to success is to identify resources internally and externally. Externally, thinking in terms of emerging democracies, one should attempt to identify which U.S. and other donor countries or NGO programs are available to enhance the capabilities of existing internal organizations. Which of these may have appropriate resources that can be used in a civil-military, cooperative approach to resolve tension producing environmental problems or establish regional confidence building measures.

"Variables of Civil Defense Cooperation. There are several questions that should be asked when determining which countries offer an appropriate environment for civil-military cooperation. Does the civilian government have the capabilities to address the problem? Can the government on its own solve the problem? Does the private sector have the capabilities? This is an important question. When examining an issue and the available military capabilities to address it, it is necessary to determine whether using the military will stunt the growth of the private sector. It is difficult for a donor nation or agency to provide aid for civil-military cooperation if that civil-military cooperation will discourage growth in the private sector. Often, the decision as to whether there is a need for the military will turn on whether it has unique capabilities, such as emergency management or enforcement, that it can bring to bear. If the answer is yes, then how should their resources be combined with those of other organizations, and who will lead the effort?.

"Appropriateness. Many environmentalists believe that the military should not be involved in the environment. They point out that in its training role, the military is often a negative force for environmental change. However, around the world we have found that the military has some unique capabilities that cannot be easily ignored. Nevertheless, one must ask whether the civil population see its effectiveness, and whether they want the military to become involved? In the Philippines a decade ago, the military was viewed as oppressive. If one asked then, whether the military should be involved in the environment arena, the answer would have been no. Today, the situation is quite different. Eighty-five percent of the Philippine people support having the military help solve the environmental problems that beset local municipalities. No single

government agency can control the seven thousand plus islands that constitute the disparate geography of the Philippines, nor enforce the environmental laws and regulations. The military formerly believed that it should not be involved. The visionary leadership of the Ramos government has shown that the military does have a role, and that by supporting civil environmental initiatives, they promote the legitimacy of the government. The military prevents illegal fishing, preserves the wildlife and forest against poaching and illegal logging, and has a brigade on Mindanao for tree farming and restoring the tropical forest. They are helping to achieve government legitimacy because the people in the Philippine hinterland, where it is difficult for the government to demonstrate that it cares, see the military's environmental work as the government doing things for the common good.

"Finally, one must ask, what is the military's domestic role? What is the form of government? Is there a civilian government supported by a subordinate military, or is there a military government? A military government is often a barrier to getting outside donor support. However, a military government may make the military's assistance to a civilian environmental organization easier to achieve. Nevertheless, it is a complicating factor. Donor countries and organizations will want to know the military's role because Western donor nations want to support free trade and democracy. They will want to know whether the military is subordinate to the civilian government and whether supporting the military will threaten this relationship.

"These are critical questions I offer for your consideration as you examine the military's role in the environment. When you seek to promote cooperation between the military, environmentalists, foreign affairs experts, and

governmental agencies; or determine whether the military has the resources to help achieve environmental goals, perhaps some of the questions that I have raised will be useful."

Ms Goodman then moderated a brief question and answer period. A comment was made that the U.S. environmental program is well known and an important aspect of security is collaboration. A question was posed as to whether the U.S. congress would support U.S. international environmental efforts. The answer was that support will continue because the environment and environmental security are recognized as important. There will be continued funding, but it will be at modest levels. One attendee noted that many of the examples of environmental problems had focused on Africa and the questioner asked about the importance of Asia in the environmental security equation. Africa was used as an example but was not meant to exclude other parts of the world. In terms of the issue of climate change, the support of China is absolutely essential. Unfortunately, economic development is bypassing Africa and this is helping to exacerbate the environmental problems there.

CHAPTER V
PANEL SESSION II - INTERNATIONAL ENVIRONMENTAL SECURITY AND THE NATO ALLIANCE

The second discussion panel of the Plenary session was chaired by Mr. Gary Vest and included Mr. Anthony Downs from Canada, Dr. Irene Freundenschuss-Reichl from Austria, and Professor Bedrich Moldan from the Czech Republic. Mr. Vest introduced the panel members and then gave a brief overview of the United States and NATO's work on environmental issues. In 1970/71 was when environmental work first began, and this was on a bilateral basis. In 1980, CCMS held two significant conferences on "Military and the Environment" and "Training and Aircraft Noise." By the mid 1980s there was debate within CCMS on how much defense related work should be undertaken. At first there was little, but the quantity has grown over time. There has been a general rise in environmental awareness and there have been efforts to enhance environmental programs. The NACC workplans talk to environmental issues. However a setback of sorts occurred when the environment was not included in the PfP. Environmental questions were raised before the IFOR commitment but the results were none. However, there is now a recognized need for environmental issues and SACEUR addresses environmental clearance actions before a country leaves Bosnia. Mr. Vest showed the following slide which depicted the U.S. Defense Department's international environmental security philosophy:

PHILOSOPHY OF DoD INTERNATIONAL ENVIRONMENTAL SECURITY

- **Vision: Transform the militaries of the world into environmentally sensitive organizations**
  - U.S. military first to make transition beginning in 1970
  - NATO militaries followed beginning in early 80's
  - Central and Eastern Europe and Russia
  - Asia-Pacific
  - Latin America
- **Principles: Peace and stability through**
  - Quality of Life
  - Quality of the Environment
  - Cooperative Engagement
- **Objective: Change military behavior and culture**
- **Move the militaries of the world from the negative to the neutral to the positive environmentally**
- **Preventive Defense: Creating the conditions which sustain peace through mil-to-mil cooperation**
- **Military Environmental Security provides the tools**

Mr Anthony Downs talked on "Environment and Security in NATO - In a Canadian Context."

INTRODUCTION

"Ladies and Gentlemen, my presentation will be from the point of view of a defence environmental policy maker. I will look, at Canada's approach to environmental protection and how that can be translated into an environmental security policy for Canada. This could be one route that NATO may follow to achieve whatever goals

it sets for itself in this field. I was very impressed with the progress of yesterdays work. When completed there should be a most comprehensive guide for NATO to follow, should it so choose.

BACKGROUND

"As we all know, the challenges of environment and security are many, ranging from natural disasters, to cross-border contamination problems, to a lack of a true sustainable development policies. Here, on the fifth Anniversary of the Rio Earth Summit, countries that participated are going to be judged on their environmental record and their future commitments. The RIO Conference was unprecedented in its consensus on the need for Sustainable Development. The RIO Declaration itself is a formula for environmental security. The planned UN General Assembly Special Session at the end of June will look at the progress since Rio. In addition, other upcoming international events may lend themselves to some progress this year - G7 Environment Ministers meeting this month and the APEC Environment Ministers meeting in June.

"But, will we now find that population growth and economic growth have outstripped environmental progress? And, has that economic growth been assessed for its Sustainable Development balance? We do need a pragmatic approach: - economic growth and social well-being, with environmental considerations built in. I would like to focus on some ways that individual nations and NATO can move their efforts forward in this regard. As I said earlier, I will look at Canada's current approach from a political/planning point of view. Canada's environment and development policy is very much linked with its foreign and security policy.

- DISCUSSION

"Environmental Policy. In the early 90's, Canada's goals for its foreign policy were stated as follows:

- to promote prosperity and employment;
- protect Canada's values and culture.
- to protect its security, within a stable global framework;

This third goal, protect its security within a stable global framework, is what we are all after here. The Canadian premise is that "A successful Sustainable Development policy is a pre-condition to Security." To achieve a true sustainable development policy, there are three main policy considerations (Canada's espouses them, as do others, and they do apply to all nations):

a. Firstly - a country must protect its own environment. One cannot lead others if one's own house is not in order, and is seen to be in order by others! This means operating in accordance with the principles of Sustainable Development, as envisaged by the Bruntland Commission. In addition, a government must take into account the desires of its populace. For example, the Canadian Government must take into account the fact that 88% of Canadians say they are "concerned about the environment", and 95% of Canadians identified environment and peace-keeping as important foreign policy goals for Canada.

b. Secondly, a nation must look at its impact on the environment of other nations and the globe in general - Canada for example has to address its large consumption of energy, and water and its high waste volume, things that will impact outside of Canada in the very long term. Greenhouse gas and ODS emissions are

impacts all industrialized nations have on the world's environment; and,

c. Finally, a nation must protect itself and its environment from external environmental threats. The most obvious of these are:

- acid rain and global warming;
- pollution of common rivers, ground water, ocean and air currents;
- loss of biodiversity; and,
- destruction of carbon sinks.

"It is in this third dimension that a nation begins to turn its attention to those environmental problems that could threaten not only its environment, but its security, and even global security. Most environmental problems are domestic initially, and therefore under a nation's control. They can escalate quickly to become the concern of neighbours if appropriate measures are not taken by the originating nation. That is, local problems, whether caused by natural or man-made occurrences, can impact on regional and eventually world security.

"A nation's international trade position is affected by its own Sustainable Development approach. Forestry, fishing, mining and the fur industry in particular stand out for Canada. (For example, the world watches Canada's fur trade, and chlorine use in pulp and paper mills closely). How a nation deals with the economy and its environment in these sectors telegraphs the relative priority of its international environment and security stance. On a more self interest note, if a nation is actively solving its environmental problems, it will have created a significant environmental technology industry that will create other

opportunities for trade and for cooperation with other states. It is forecast that with the world population and economic growth, the market for environmental goods and services will increase by 40%. A fact not to be lost in all this.

"Canada is still in the situation of improving its domestic protection of the environment. This takes different forms as Sustainable Development is applied in different ways. Under the current economic climate in Canada, some provincial governments are actually moving to reduce environmental protection measures where such are seen as too restrictive on economic development. While this is within the principle of Sustainable Development, it must continually be monitored to ensure the end result, leaving a habitable and enjoyable environment for future generations, is still achievable.

"This domestic responsibility must develop into, or reflect, an international responsibility - long-term viability of the world's environment, while aiming for a reasonable and sustainable economic and social balance - a difficult objective considering the current imbalance in the world's economic levels. So, this is a challenge for all our nations. Collectively, we can make some measure of progress through NATO.

"There are a number of specific actions NATO can take to prepare its members and, in fact, any nation so desiring assistance:

- Aid in setting up disaster relief plans as well as actual response units
- Advance the technical capabilities of its members and its partners

- Train military and policy analysts in environmental "flashpoint" indicators, that is what to watch for early on to be able to take steps to prevent disasters or actions of national and even international significance - much as we discussed yesterday

- Assist less developed nations with the technical expertise to achieve their economic goals while preserving agreed environmental goals as well.

"As an alliance, all members and partners do not have the same level of environmental health nor do they have all the expertise - it can be shared with certain members taking the lead where they have the expertise to do so. Scientists have cooperated in past across borders. We need to strengthen these links and develop methodologies to assess environmental problems, internally as well as externally. This Pilot Study, again, is an ideal and timely example of how nations can begin to share and develop common approaches to problems.

CONCLUDING REMARKS

"I believe, NATO's individual members and partners must demonstrate a visible environmental commitment based on sustainable development, at home, in order for NATO, collectively, to demonstrate leadership and to have a meaningful voice outside of NATO. NATO must also integrate its members and partners agenda's before it can impact significantly or lead, the integration of others environmental agenda's. NATO must, of course, be cognizant of other organizations efforts, such as the G7 and APEC, and of the UN's in particular. The will to move must be there - is NATO ready? We would hope that Security will improve with each successful action or step taken, no matter how small at first."

Dr. Irene Freundenschuss-Reichl addressed the issue of "International Environmental Security and the NATO Alliance" from a PfP perspective.

"The relationship between security and the environment in an international context can be looked at with regard to

- prevention
- protection of the environment in times of armed conflict
- post--conflict--phase (peace making, peace building; confidence-building;)
- economic, social and civil reconstruction of war--torn countries.

"I would like to focus today on the prevention perspective. 'Development is another name for peace.' Today we know that development has to ensure sustainable human development in order to be synonymous with peace. What is sustainable development? A working definition is development that allows us to satisfy our needs without undermining the possibility of our children to meet theirs. It includes the dimensions of economic growth, social development, ecological soundness; and also human rights, good governance, equality between women and men.

"If it can be said that ethnic strife is today at the root of many conflicts, it would seem important to examine closely how unfavorable socio--economic conditions for ethnic minorities are often compounded by ecological problems. It is always and everywhere the poor and the marginalized that bear the heaviest burden in terms of pollution and environmental degradation.

"The Rio + 5 process shows that while we have the knowledge (about the long--term beneficial effect of sustainable development), we lack political will. The overall trends in terms of global environmental problems and the use of natural resources have worsened since Rio.

The turnaround point today is farther away than it was in 1992. NATO should therefore use its political clout to help create a sense of urgency. It should contribute to placing the challenge of sustainable development at the center of the national and international political agenda.

"Agenda 21 called for national programs for sustainable development. So far mainly national reports have been compiled on what is done anyway with slight reorientations and shifts of emphasis. There seems to be much more a tradition in military planning that starts with a goal that is deemed desirable; then one works backward from that goal to see what is needed to achieve the goal; finally the strategy is implemented. Perhaps that goal--oriented way of proceeding could 'contaminate' the policy--making in other government departments for the benefit of sustainable development ?

"At the heart of the sustainable development challenge lies the issue of shifting towards more sustainable patterns of consumption and production. In most societies the military plays an important modeling role. It would be important to ensure sustainable consumption modes both within military facilities and operations (parades, etc.) and in the personal life--style decisions of military staff, in particular of the leaders. NATO would have a crucial role--model function in this regard. ('Greening NATO') NATO could identify specific 'hot issues': situations, areas where ecological problems are likely to have security implications, both within the territory of the alliance and outside it. On specific 'hot issues,' NATO could seek to build alliances with other players, as appropriate (States, international organizations, science, media, civil society at large etc.) and try to do something concretely in relation to the given 'hot issue,' including the earmarking of military funds.

"NATO could also follow, as appropriately, major global negotiations on global environmental issues and on

regional issues which are of interest to the alliance. NATO could negotiate and adopt a Common Understanding of NATO members on the importance of preventive policies of sustainable development in order to avoid violent conflict. NATO members would pledge themselves to certain concrete measures. NATO could work together with other military alliances and institutions to build awareness and capacity on the environment and security nexus. Good practices could be systematically collected and exchanged. NATO could endeavor to build public support, through appropriate media channels, international symposia or the like, for the environment and security approach."

The final presentation was given by Professor Bedrich Moldan who addressed "Environmental Security within the Sustainable Development Framework." He noted that the Rio Conference was a success despite some retrospective misgivings. Put into an historical context, Rio placed the environment and development into a common framework. Professor Moldan pointed out that development has several dimensions: economic, human/social, and institutional, including the military. One needs to look at economic theory and practice; there has been an explosion of environmental economic theory. It looks at the relationship between trade and environment and also looks at production and consumption. This has put a new perspective on (1) environmental economy, e.g., the wealth of nations, the notion of natural capital, and carrying capacity, (2) sustainable human development - equity, eradication of poverty, human dignity, and (3) institutions of democracy and justice.

Sustainable development is development which is environmentally secure and devoid of threats and/or risks. Sustainability = Security = Environmental Security =

Military Security. This is a new perspective for the environment. Nothing is "exclusive," it "shapes everything," and it must be placed within the framework of sustainable development. Environmental security is a dimension and a specific aspect of "overall security."

Mr. Vest then moderated questions and comments from the group. One attendee asked for the sources of environmental degradation. The response was that CO_2 emissions had gone down by 20% but are now up again. They are rising in the United States and Europe. In Russia there was a 10% drop in pollution which accompanied the 50% drop in production. Another participant wondered how to make Sustainable Development work in the United States. The panelists noted that in Canada there is a top down commitment and that NAFTA will deal with the environment in terms of sustainable development. In Austria, the transportation sector is moving away from Sustainable Development and even in the energy field, where Austria is blessed with abundant hydroelectric power sources, there is not sustainable development. However in consumption patterns, the population, especially at the grass roots level, is starting to recognize the need for sustainable development. It was also pointed out that Austria is one of the most progressive states in terms of addressing the issue of sustainable development. Eastern Europe is unsustainable now as it seeks to reach the economic levels of the remainder of Europe. However it should be noted that Eastern Europe has made remarkable strides in economic cleanup. Another question concerned the most important thing NATO could do to enhance environmental security. Answers ranged from NATO getting its own house in order, to increasing cooperation and showing what has been achieved, and placing the issue of environmental security on the agenda of a NATO Summit Meeting.

After this panel session, the CCMS Pilot Study meeting adjourned until May 22nd. On May 21st the participants in the Pilot Study meeting and the panelists benefited from their participation in a Simulation Game, which had been organized by the Pacific Northwest National Laboratory and the U.S. Army War College Center for Strategic Leadership. It was welcomed by all as an opportunity to exchange ideas on policy solutions for environmentally induced conflict.

CHAPTER VI
CONCLUDING PLENARY SESSION

Mr. Vest opened the concluding plenary session by noting that there were four topics to be addressed before adjournment: (1) The model first presented during the Subgroup 1 meeting on May 19th and subsequently refined during the Subgroup 1 report on May 20th; (2) the organization of the Pilot Study; (3) the schedule of future events; and (4) the proposed table of contents for the Pilot Study Final Report.

Mr. Lietzmann then presented a review of the Pilot Study Subgroup Structure as indicated below:

Pilot Study Subgroup Structure
Subgroup 1 - Definition and Modeling

1. Update existing lists of serious conflicts in which conflicts over natural resources and the environment played a major role.

2. Development of criteria for assessing to which degree a conflict has been caused by environmental degradation and natural resource scarcities.

3. Elaboration of criteria for assessing the security risks associated with environmental problems.

4. Development of different categories of environmental problems according to the extent to which they are relevant to security.

5. Definition of indicators and reasonable thresholds of severity of environmental problems that indicate heightened danger of their causing or contributing to serious conflict.

6. Development of a taxonomy for indicator--oriented data collection

Subgroup 2 - Delineation and Development of a Database and a Decision Support System

1. Collection of data on a representative sample of environmental threats to security at different levels of conflict based on the results of the taxonomy elaborated in Subgroup 1.

2. Definition of early warning indicators and ways of integrating relevant environmental factors into existing early warning systems.

3. Developing a decision support system.

Subgroup 3 - Risk Analysis and Recommendations for Environmental Politics and Security Politics

1. Comparative threat assessment of major global and regional environmental problems in order to set priorities as regards their security relevance.

2. Integrated threat assessment for the NATO region as well as for other regions particularly relevant to NATO.

3. Evaluation and further development of selected environmental policy responses to environmental threats to security.

4. Evaluation and further development of selected security policy responses to environmental threats to security..

Mr. Lietzmann used the above outline to describe the proposed Table of Contents for the Final Report of the Pilot Study and he also specified who had agreed to head the drafting effort for each topic. The proposed outline and re - sponsible countries/group is:

Pilot Study: Environment and Security in an International Context

(Coordinating country is underlined)
Report of about 150-200 pages.

Table of Contents

1. *Executive Summary - (D; USA)*

2. Foreword **-** *(Co-chairs)*

3. Introduction - (D; USA)

4. NATO/NACC/PfP Security Context (USA, D)

5. Definition and Modeling (SGI; Chair: USA; Co-chair: Germany)

5.1 Updated list of environmentally induced serious con - flicts (CH)

5.2 Security Context Assessment

5.2.1 Criteria for Security Risk Assessment (D)

5.2.2 Assessing the Links between Environment and Security (PL; D)

5.3 Thresholds of Severity and Their Contribution to Serious Conflicts (USA)

5.4 Typology of Environmentally Induced Serious Conflicts (CH)

5.5 Taxonomy for Data Collection (?)

6. Definition and Development of a Database and a Decision Support System ***(SG II; Chair: CZR)***

6.1 Database of Environmental Threats to Security (CZR; USA; D)

6.2 Environmental Indicators for Existing Early Warning Systems (CZR; CH; D)

6.3 Decision Support System (USA)

7. Risk Analysis and Recommendations for Environmental Policies and Security Policies - (SGIII; Chair: D; Co-chair: A/F)

7.1 Comparative Threat Assessment and Security Priorities (S)

7.2 Integrated Threat Assessment for the NATO/NACC/PfP Area of Interest (PL; D; USA)

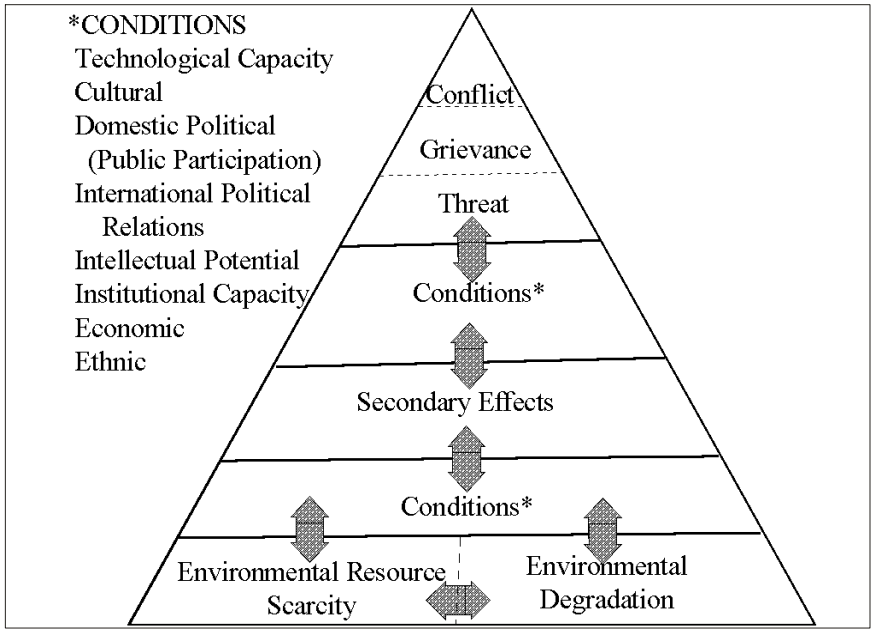
7.3 Selected Foreign and Security Policy Responses (F; USA)

7.4 Selected Environmental and Development Policy Responses (A)

7.5 Recommendations for Improving International Institutions (A; D)

8. Appendices

He urged all participants to become involved in any portion of the Pilot Study that they wished, either as co-chairs or as participants. In addressing issue 5.3, he displayed the following graphic which had been refined from the initial graphic displayed during the preliminary Subgroup 1 meeting on May 19th. All participants agreed that the revised graphic portrayed a better sense of the complex interrelationship between Environmental Resource Scarcity and Environmental Degradation and the Conditions (or Nurturing Agents), the Secondary Effects (social, economic,



political, etc.), again impacted by Conditions which could ultimately lead to conflict. The two headed arrows indicate the two way relationships between these aspects. This

model will be further studied and refined at future Subgroup working sessions.

Mr. Lietzmann asked if there were any objections to the proposed Table of Contents and distribution of tasks. There were none, and this was to be the plan of action.

Mr. Alexander Carius then presented a draft workplan for the Pilot Study to the group for their comments. In October there would be meetings of Subgroup Two in Prague and Subgroup Three in Warsaw. These Subgroup Workshops would continue to build upon the work of Subgroup One and the initiatives started in Carlisle. There would be a series of workshops, editing sessions, and Plenary Sessions during 1998 as indicated above. Switzerland will organize a workshop in Bern, probably in February 1998. Austria will host the next Pilot Study meeting in the third

1997	
MAY	**OCTOBER**
III PILOT STUDY MEETING	WORKSHOP SUBGROUP #2
19-22 MAY	16-17 OCTOBER
CARLISLE, PA	PRAGUE
Decision on detailed work programme; participation by other Pilot Study participants	Refine Subgroup Issues
	WORKSHOP SUBGROUP #3
	20-22 OCTOBER
	WARSAW
	Focus on 1C, 3.1 &3.2

week in March back to back with a meeting of Subgroup Three which will conduct a workshop on environmental and development policy options. An initial draft of the Pilot Study Report would be sent out in September and would then be commented on during the October Pilot Study Meeting. During 1998, additional subgroup meetings could occur as required. Comments and recommendations would be incorporated by the Editing Committee in November

1998						
FEBRUARY	MARCH	MAY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
WORKSHOP SUBGROUP #1	WORKSHOP SUBGROUP #3	GLOBAL WORKSHOP CCMS, EU/EEA, OECD, UN/ECE	FIRST EDITING MEETING		V PILOT STUDY MEETING	SECOND EDITING MEETING
SWITZERLAND	VIENNA					
FOCUS ON 1.1 - 1.4	FOCUS ON 3.3 &3.5			SEND OUT DRAFT PS REPORT	FINALIZE THE PILOT STUDY REPORT	
	IV PILOT STUDY MEETING					
	VIENNA					

with a goal of presenting the Pilot Study to the group at the final Pilot Study Meeting in January 1999 with a goal of presenting the final, approved Pilot Study to the CCMS Plenary currently scheduled for March 1999. It was also noted that Subgroup meetings could be linked to regional meetings. One participant noted that the organizers of Subgroup Workshops needed to know in advance who intended to attend. The workshops were designed to be work sessions where all who came were expected to participate in the drafting of the workshop proceedings. It was also indicated that as Subgroups drafted specific issues they needed the results of other Subgroup meetings. The co-chairs noted that some results should be available and that all participants needed to share their work with the other members of the Pilot Study.

1999	
JANUARY	MARCH
VI PILOT STUDY MEETING	CCMS PLENARY MEETING
BRUSSELS	
FINAL APPROVAL OF THE PILOT STUDY	PRESENT PILOT STUDY FINAL REPORT

The co-chairs remarked that until now the Pilot Study has been preparing for work but now the work is starting in earnest. A call was made for any final remarks from the participants. None were made. The co-chairs again expressed their gratitude to Dr. Kent Butts and the Center for Strategic Leadership for providing the Collins Hall facility and for cohosting the meeting in conjunction with the Pacific Northwest National Laboratory. Noting that there was minute remaining until the scheduled end of the meeting, they adjourned the Third Meeting of the NATO/CCMS Pilot Study on "Environment and Security in an International Context" one minute early.

APPENDIX A

PARTICIPANTS

AUSTRIA

Dr. Irene Freudenschuss-Reichl, Head, International Department/EU, Federal Ministry for the Environment, Youth and Family Affairs

BELARUS

Mr. Mikhail Pigoulevski, Chief Expert, Ministry of Natural Resources and Environmental Protection of Belarus

CANADA

Mr. Anthony Downs, Director-General, Environment

Dr. Chris Tucker, Senior Scientific Advisor, Emergency Preparedness

CZECH REPUBLIC

Mr. Petr Kozel, Regional Advisor, Ministry of Defense of the Czech Republic

Professor Bedrich Moldan, Environmental Center, Charles University

FINLAND

Mr. Antti Kivipelto, Ministry of Defence

Mr. Risto Rautiainen, Senior Counselor, Ministry of Foreign Affairs

FRANCE

Mr. Marc Bernier, Department Head, ODCA/SAA, Embassy of France

Mr. Jean Marie Guastavino, Attaché for Science and Technology (Environment), Embassy of France

GERMANY

Mr. Alexander Carius, Director, Ecologic

Ms Kerstin Imbusch, Research Fellow, Ecologic

Mr. Kurt Lietzmann, Federal Ministry of Environment, Nature Conservation and Nuclear Safety

Mr. Matthias Paustain, Research Assistant, Ecologic

Major Volker R. Quante, FAFORSE

Lieutenant Colonel H.-J. Scholz, Ministry of Defense

Dr. Stefan Summerer, Senior Advisor, Federal Agency for Environment

HUNGARY

Mr. Csaba Kiss, Director, Environmental Security Center, Ministry of Defense

Mr. Kristof Kozak, CCMS National Coordinator

KYRGYZ REPUBLIC

Mr. Aibek Tilebaliev, Second Secretary, Embassy of the Kyrgyz Republic

LATVIA

Professor Andrejs Silins, Secretary General, Latvian Academy of Sciences

LITHUANIA

Major Valdemaras Sarapinas, Defense Attaché, Embassy of Lithuania

Professor Jurgis Staniskis, Director, Institute of Environmental Engineering, Kaunas University of Technology

MOLDOVA

Mr. Sergiu Galitchii, Director, Operative Informational System, State Ecological Inspection

POLAND

Lieutenant. Colonel Voleslaw Adamczyk, Deputy Defense Attache, Embassy of Poland

Colonel Waldemar Dziegielewski, Defense Attaché, Embassy of Poland

Mr. Stanislaw Wilczkowiak, Deputy Director, Ministry of Environmental Protection, Resources and Forestry

Colonel Andrzej Wlodarski, National Security Bureau

ROMANIA

Dr. Corneliu Negulescu, Deputy Scientific Director, Research and Engineering Institute for the Environment

SLOVAK REPUBLIC

Mr. Lubomir Kusnir, Department of the Environment, Ministry of Defence of the Slovak Republic

SWEDEN

Mr. Gunnar Arbman, Director of Research, Swedish National Defence Research Establishment

SWITZERLAND

Mrs. Eva Affolter Svenonius, Department of International Affairs, Ministry of the Environment

TURKEY

Lieutenant Dr. Mesut Hakki Casin, International Agreements Inspection Officer, Turkish General Staff

Lieutenant Commander Fikret Hakguden, International Agreements Inspection Officer, Turkish General Staff

Dr. A. Cemal Saydam, Professor, Middle East Technical University RS&GIS Center

Mr. Gazne Soysal, Executive Director, Center for Strategic Research, Ministry of Foreign Affairs

UNITED STATES OF AMERICA

Dr. Richard Ball, Physical Scientist, Office of Policy and In - ternational Affairs

Mr. Larry Blotzer, Professor of Political-Military Affairs, Center for Strategic Leadership, U.S. Army War College

Dr. Dexter Bryce, Senior Scientist, GEO-CENTERS, Inc.

Dr. Kent Butts, Professor of Political-Military Gaming, Center for Strategic Leadership, U.S. Army War College

Ms Elizabeth Campbell, Office of Policy and International Affairs, Department of Energy

Mr. George Fidas, Deputy National Intelligence Officer, Global Multilateral Affairs, National Intelligence Council

Rear Admiral Thomas Fox, Pacific Northwest National Laboratory

Ms Sherri Goodman, Deputy Undersecretary of Defense (Environmental Security), U.S. Depart-ment of Defense

Mr. Nestor Gounaris, NATO CCMS Fellow

Ms Wendy Grieder, Office of International Activities, U.S. Environmental Protection Agency

Ms Joanne Grossi, Senior Program Officer, Office of Popu - lation, U.S. Agency for International Development

Mr. Alan Hecht, U.S. Environmental Protection Agency

Mr. Lawrence Koss, Head, Ships and Air Branch, Environment, Safety and Health, Office of the Chief of Naval Operations

Ms Laurie MacNamara, Senior Analyst, Evidence Based Research, Inc.

Mr. Jonathan Margolis, Department of State

Ms Christa Matthew, Managing Editor, Environmental Change + Security Project Report

Dr. Richard Matthew, Professor, School of Foreign Service, Georgetown University

Mr. Mike McNerney, Office of the Deputy Undersecretary of Defense (Environmental Security)

Mr. John Mentz, Pacific Northwest National Laboratory

Mr. Lee Pasarew, Office of International Activities, U.S. Environmental Protection Agency

Dr. David Sandalow, U.S. National Security Council

Dr. Brian Shaw, Director, Center for Environmental Security, Pacific Northwest National Laboratory

Mr. Brian Smith, Research Analyst, Evidence Based Research, Inc.

Dr. Bert Spector, Director, Center for Negotiation Analysis

Mr. Reinhart Streit, U.S. Army Corps of Engineers

Mr. Scott Thayer, Special Assistant, Office of East European Assistance, U.S. Department of State

Mr. Robert Urban, President, PCCI, Inc.

Mr. Gary Vest, Principal Assistant, Deputy Under Secretary of Defense (Environmental Security)

APPENDIX B

COMMITTEE ON THE CHALLENGES OF MODERN SOCIETY (CCMS) PILOT STUDY "ENVIRONMENT AND SECURITY IN AN INTERNATIONAL CONTEXT"

TERMS OF REFERENCE[1]

I. BACKGROUND

1. The Roundtable on Environmental Security, which occurred on the occasion of the NATO/CCMS Plenary Meeting in Washington, D.C. on November 14, 1995, highlighted the importance of the relationship between environment and security. There was a general understanding during the Roundtable that man-made environmental degradation, resource depletion, and natural disasters may have direct implications for the security of the international community. The Roundtable addressed the importance of comprehensive threat assessment, risk analysis, and requirements prioritization.

2. Large-scale environmental changes, like climate change, ozone depletion, floods and persistent drought, may result in regional or global disruptions of stability and security. In many parts of the world, unsustainable use of natural

---

1 See Internet site http://echs.ida.org/s05/terms.html, accessed on May 28th, 1997

resources, uneven population distribution, and competing economic priorities lead to deforestation, soil erosion, and desertification. Such environmental hazards may induce mass migrations and provoke conflicts over increasingly scarce renewable resources. With no well established conflict management mechanisms, localized environmental problems may escalate into conflicts of concern to NATO. For NATO countries the security dimension is clear. This also applies for other countries, especially those directly experiencing the hazards in question. A complete definition of security would include these components.

II. PURPOSE AND SCOPE OF THE PILOT STUDY

3. The purpose of this pilot study is to analyze the relationship between environmental change and security in an international, regional, and global level. Sustainable development and a precautionary approach should be stressed as guiding principles for measures in the field of environment and security.

4. The main goal of the pilot study should be to elaborate conclusions and recommendations to enhance environmental aspects in security deliberations, and to include security considerations in national and international environmental policies and instruments. These conclusions and recommendations will be designed to provide a basis for senior-level decision-making. The pilot study will develop methodologies and approaches for analysis and prioritization of environmentally-induced security risks. It should also elaborate new priorities in national and international policy-making including institutional arrangements. The pilot study should be conducted with a view to designing appropriate preventive measures and strategies. Another goal is to enhance the capacity to analyze the evolving interaction between environment and security.

III. PLAN OF WORK

5. The first step in 1996 should be to gather and analyze the existing information on the relationship between environment and security with special consideration to research on peace and conflict. This should include an evaluation of recent conflicts caused entirely or partially by environmental factors, resulting security impacts, and methods of resolution. On the basis of these analyses, the study should assess the risks to security from environmental degradation, factors that transform environmental problems into security issues, and preventive mechanisms and institutional arrangements. The pilot study should develop a list of major regional environmental and security priorities and identify how those priorities interact with other NATO objectives. This could lead to a spectrum of recommended actions in the second half of 1997. These activities will form the basis for the final report. The final report will be drafted for consideration by the 1998 Autumn Plenary Meeting of NATO/CCMS.

IV. SCHEDULE OF WORK

6. The pilot study will hold its first meeting in the first half of 1996. In addition to exchanging information and performing research, participants will hold at least four other meetings:

Second half of 1996: to summarize, exchange, and analyze existing expertise, including classification of recent environmental conflicts, their resulting security impacts, and methods resolution;

First half of 1997: to assess and prioritize environmentally-induced risks to security;

Second half of 1997: to elaborate and define a spectrum of possible actions, mechanisms, and institutional arrangements to prevent or resolve environmental and security problems;

First half of 1998: to develop conclusions and recommendations for the final report.

7. The first pilot study meeting will be hosted by Germany. Other co-pilot and participating countries are expected to host the other meetings.

V. PILOT STUDY DIRECTORS

8. The study will be co-chaired by Germany and the United States with the following pilot study directors:

Mr. Kurt M. Lietzmann
Federal Ministry for Environment, Nature
Conservation, and Nuclear Safety
P.O. Box 120629
D-53048 Bonn
Federal Republic of Germany
Tel: 49-228-305-2330
Fax: 49-228-305-3337 or 3338

Mr. Gary Vest
Principal Assistant Deputy Under Secretary
of Defense (Environmental Security)
DUSD (ES)
3400 Defense Pentagon
Washington, D.C. 20301-3400
U.S.A.
Tel: 1-703-697-1013
Fax: 1-703-693-7011

APPENDIX C

AGENDA
NATO CCMS Pilot Study
"Environment and Security in an International Context"

Day 1

0800-0830 Registration

0830-0900 Opening Remarks

- Mr. Larry Blotzer, CSL
- Mr. Gary Vest, Pilot Study Co-Chair
- Mr. Kurt Lietzmann, Pilot Study Co-Chair

0900-1200 Subgroup #1 - Definition and Modeling

1200-1300 Lunch

1300-1500 Subgroup #2 - Definition and Data BaseDevelopment

1530-1730 Subgroup #3 - Policy Responses

1740-1930 Reception

Day 2

0900-0945 Welcoming Remarks

- Major General Richard Chilcoat, Commandant U.S. Army War College

- Rear Admiral (Retired) Thomas Fox, Pacific Northwest National Laboratory
- Mr. Gary Vest, Pilot Study Co-Chair
- Mr. Kurt Lietzmann, Pilot Study Co-Chair

0945-1015 Old Business

- Mr. Gary Vest, Pilot Study Co-Chair
- Mr. Kurt Lietzmann, Pilot Study Co-Chair

1030-1200 New Business

- Mr. Gary Vest, Pilot Study Co-Chair
- Mr. Kurt Lietzmann, Pilot Study Co-Chair

1200-1330 Lunch

1330-1500 Panel Discussion #1 - Environmental Security as a Component of Preventive Defense (Engagement)

- Ms Sherri Goodman, DoD, Chair
- Mr. Jonathan Margalis, DoS
- Ms Elizabeth Campbell, DoE
- Mr. Alan Hecht, EPA
- Dr. Kent Butts, CSL

1530-1730 Panel Discussion #2 - International Environmental Security and the NATO Alliance

- Mr. Gary Vest, DoD, Chair
- Mr. Anthony Downs, Canada

- Dr. Irene Freundenschuss-Reichl, Austria
- Professor Bedrich Moldan, Czech Republic

1800-2000 Dinner

Day 3

0900-1000 Final Plenary Session

- Mr. Gary Vest, Pilot Study Co-Chair
- Mr. Kurt Lietzmann, Pilot Study Co-Chair

1030-1130 Presentation of Overall Pilot Study Work Schedules

- Mr. Gary Vest, Pilot Study Co-Chair
- Mr. Kurt Lietzmann, Pilot Study Co-Chair

APPENDIX D

NATO CCMS Pilot Study
Environment and Security in an International Context
Subgroup Meeting on Definition and Modeling

MINUTES

21-22 January 1997
Pacific Northwest National Laboratory
901 D Street, SW
Washington, DC

This was the first meeting of Subgroup #1 *Definition and Modeling* of the NATO CCMS Pilot Study *Environment and Security in an International Context* and was hosted by the Center for Environmental Security of the Pacific Northwest National Laboratory (PNNL). The meeting began with introductory and welcoming remarks by Dr. Brian Shaw, PNNL, RADM Thomas Fox, USN (ret.) (PNNL), Mr. Gary Vest, Pilot Study/Subgroup U.S. co-chair, Mr. Kurt Lietzmann, Pilot Study/Subgroup German co-chair, and Ms. Wendy Grieder, NATO/CCMS U.S. National Coordinator.

The introductory remarks were followed by a brief presentation made by Dr. Brian Shaw on the objectives of the subgroup meeting. Dr. Shaw outlined the need to develop an overall methodological framework for the Pilot Study with specific attention to the tasking assigned to Subgroup #1 at the Pilot Study meeting in Ankara. Efforts also need to be focused on developing an open architecture to coordinate the integration of the work of Subgroups #2

and #3 when these bodies meet in the coming months. Dr. Shaw's presentation was followed by a presentation made by Mr. Alexander Carius, Ecologic which reviewed the outcome of the Ankara meeting. Minutes from the Ankara meeting, which included the structure of the subgroups, had been distributed to the Pilot Study participants by the German co-chair. (See following presentation and Attachment #3). Notable changes in Ankara included the substitution of the term "serious conflict" for "violent conflict" and the inclusion of domestic or civil conflict as well as interstate conflict.

The meeting moved into presentations on the subgroup framework. The first presentation was made by Major (GS) Volker Quante, FAFORSE, on the working structure of the subgroups. Maj. Quante reviewed the reasoning behind the subgroup structure and then presented the structure as adopted in Ankara. It was noted that the changes in wording from "violent conflict" to "serious conflict" still need to be made to the documents in the Ankara minutes. Those changes are reflected in Attachment #3. The second presentation was made by Dr. Bert Spector, Center for Negotiation Analysis, of a paper authored by he and Dr. Shaw on developing a Pilot Study methodology. (See Attachment #4) The methodology paper presentation centered around four key analytical questions or steps which are listed below:

- Characterize the problem and its environmental component
- Conduct a security context assessment
- Decide on policy goals and evaluate responses
- Develop early warning indicators and support systems

At the conclusion of the presentation, the meeting launched into a discussion of the general framework and then of the analytical steps as elaborated by Dr. Spector. Questions were raised about the need to cover a broader range of

instances as opposed to just conflict. Reference was made to a diagram introduced at the Ankara meeting which served as a useful schematic representation of the spectrum of activity which the Pilot Study needed to address. (See Attachment #5.) It was decided that the methodology under development needed to address a range of concerns which included violent conflict on one extreme and peace on the other. Given the consideration of the need to focus on issues of concern to NATO security, it was decided to undertake the NATO security context assessment prior to the environmental assessment, to ensure that only those environmental issues that represent potential security concerns for NATO are selected for analysis. This NATO security context assessment would address the scope of conflict issues as they applied to the alliance. Additional questions were raised over the appropriate ordering of the framework parts and the degree of feedback that needed to be brought to the model. Questions were raised over the problems of perceptions of scarcity versus quantification of scarcity. The tasks assigned to Subgroup #1 by the subgroup structure presented by Maj. Quante were compared to the framework areas and the specific questions cited under each category in the framework. It was determined that the responsibility for tasks 5 and 6 under the subgroup structure would be shifted to Subgroup #2.

A five part framework was approved (see Attachment #6) with Subgroup #1 directly responsible for developing three of the sections. Those sections are as follows:

- NATO Security Context
- Environmental Characterization

- Security Context Assessment

The other two sections of the framework were decided to more properly belong in the domain of one of the other subgroups. The disbursement is as follows:

- Evaluate Policy Responses: Subgroup #3
- Develop Early Warning Indicators/Systems: Subgroup #2

As the group prepared to break for dinner, it was decided that Subgroup #1 would develop an annotated table of contents for the final pilot study report. The table of contents would include an introduction and an overview of the subject area to date with actual cases included in an appendix. It was also decided that Subgroup #1 would issue progress reports to all Pilot Study participants, both past and current. Materials developed for the Subgroup #1 will be distributed across the Internet and posted to the ECHS web site at http://echs.ida.org.

Dinner was hosted by the Center for Environmental Security at the Cosmos Club in Washington, DC. Rear Admiral Thomas Fox, USN (ret.) presented the keynote speech on his view of the role of environment in NATO security planning during his tenure of active service. He noted with interest that NATO had addressed the issue of environment as early as the mid-1980s and that its relevance to the alliance had only increased since that time.

The meeting reconvened the next morning and began with a presentation by Dr. Steven Colson (PNNL) and Dr. Larry Morgan (PNNL) on environmental characterization and risk methodology related to the reduction of risk within a system. They focused specifically on hazardous and radioactive materials storage tanks at the Hanford site.

The final presentation of the meeting was made by Dr. Robert Costanza, University of Maryland, College Park, entitled *Methodology for Integrating Ecological Sciences*

with Economics and Policy. Dr. Costanza, an ecological economist, emphasized "green national accounting," the need to include the costs of environmental resources and services into aggregate figures of national wealth, such as GNP. The goal of ecological economics are sustainable economic goals, fair distribution of wealth, including distribution between generations and the efficient allocation of resources.

The final meeting session addressed organizational and administrative issues regarding the course of the subgroup. Volunteers were requested to undertake the work of the subgroup and a schedule was developed for completing the tasks. (See Attachment #7) It was agreed that Subgroup #1 would meet again at the next full Pilot Study meeting in Carlisle, Pennsylvania, USA, 20-22 May, 1997. It was suggested that the other subgroups would also convene at the Carlisle meeting and that appropriate arrangements should be made to accommodate them. Additional meetings for Subgroup #1 would be held in concert with full Pilot Study meetings. In the interim, materials generated by the subgroup would be distributed by Email, and by FAX for those without access to the Internet. Subgroup documents will also be posted to the ECHS site on the World Wide Web (http://echs.ida.org) All Subgroup #1 documents are to be produced in MS Word 6.0 for the purposes of transmission to all participants.

List of attachments:

Attachment #1:	Subgroup #1 Meeting Agenda, 21-22 January 1997
Attachment #2:	Subgroup #1 Meeting Participants
Attachment #3:	Pilot Study Subgroup Working Structure

Attachment #4: Paper: *Developing a Pilot Study Meth odology*

Attachment #5: Ankara Schematic Diagram

Attachment #6: Pilot Study Methodology Framework

Attachment #7: Subgroup #1 Listing of Volunteers and Schedule of Taskings

Attachment #8: Paper: *Accident Emergency Warning System (AWES) for the Monitoring of the Danube Water Quality*

Attachment #9: Environment and Security Methodology Schematics

Attachment #1
NATO CCMS Pilot Study
Environment and Security in an International Context
Subgroup Meeting on Definition and Modeling

AGENDA

Day One
Tuesday, January 21, 1997

0700 Transportation to PNNL Offices

0800 Welcome and Introductions

- RADM Thomas R. Fox, USN (ret.)
- Mr. Gary D. Vest — Subgroup Co-Chair
- Mr. Kurt M. Lietzmann — Subgroup Co-Chair
- Ms. Wendy Grieder — US NATOCCMS Coordinator

0830 Presentation of Agenda

- Objectives of the Subgroup Meeting — Dr. Brian R. Shaw
- Review of Ankara Meeting — Mr. Alexander Carius

0900 Discussion of Subgroup Framework (Presentations)

- Working Structure of Subgroups — Maj. Volker R. Quant Quante
- Developing a Pilot Methodology — Dr. Bertram I. Spector

1000 COFFEE/TEA

1030 Open Discussion on the Framework Presentations

1130 Discussion of Methodological Approaches to the Framework

Methodology Component (I)
Environmental Characterization Methodology

1230 LUNCH

1400 Methodology Component (II)
Security Context Methodology

1515 Methodology Component (III)
Policy Response Methodology

1630 COFFEE/TEA

1715 Methodology Component (IV)
Early Warning Indicator Methodology

1830 Transportation to Cosmos Club

Dinner hosted by the Center for Environmen - tal Security, PNNL

Address: *Non-TraditionalSecurity Challenges*

RADM Thomas R. Fox USN (ret.)

Day Two
Wednesday, January 22, 1997

0700 Transportation to PNNL Offices

0800 Invited Presentations: Environment and Security Methodology

Environmental Characterization and Risk Methodology

Dr. Steven Colson
Dr. Larry Morgan

Methodology for Integrating Ecological Sciences with Economics and Policy

Dr. Robert Costanza

1015 COFFEE/TEA

1100 Preparation of Subgroup Recommendations

- Subgroup Structure/Procedures/Integration Schedule
- Review of Country Contributions Pledged/ Possible Gaps and Issues
- Conclusion of Subgroup Working Meeting

1200 LUNCH

1400 Transportation to Hotel

Attachment #2

NATO CCMS Pilot Study

Environment and Security in an International Context

Subgroup Meeting on Methodology and Modeling

LIST OF PARTICIPANTS

Prof Gunther Baechler	Swiss Peace Foundation- Switzerland
Mr. Lawrence Blotzer	Professor, Political Military Affairs Center for Strategic Leadership U.S. Army War College - USA
Mr. Winston Bowman	Deputy Director Regional Environmental Center- Hungary
Mr. Alexander Carius	Ecologic - Germany
Dr. Mesut Hakki Casin	Lieutenant, Turkish General Staff - Turkey
Dr. Steve Colson	PNNL - USA
Dr. Robert Costanza	University of Maryland - USA
RADM Thomas R. Fox, USN (ret.)	Associate Laboratory Director, PNNL - USA
Dr. Jim Fuller	PNNL - USA
Mr. William Gallagher	U. S. Department of Defense - USA
Ms. Wendy Grieder	U. S. Environmental Protection Agency - USA

Lt. Com. Fikret Hakguden	Lieutenant Commander, Turkish General Staff (J.S. Division) - Turkey
Mr. Rolf Huchthausen	Federal Ministry of Environment - Germany
Mr. Antti Kivipelto	Ministry of Defence - Finland
Mr. Kurt Lietzmann	Federal Ministry of Environment - Germany
Ms. Laurie MacNamara	Evidence Based Research, Inc. - USA
Mr. Michael McNerney	U. S. Department of Defense - USA
Dr. Larry Morgan	PNNL - USA
Dr. Corneliu Negulescu	Deputy Scientific Director, Research and Engineering Institute for Environment - Romania
Mr. Michael Odevall	Minister, Environment and Sustainable Development Affairs, Ministry of Foreign Affairs - Sweden
Maj. Volker Quante	Major (GS) FAFORSE - Germany
Dr. Steve Rayner	PNNL - USA
Mr. William Richardson	U. S. Department of State - USA
Dr. Cemal Saydam	Middle East Technical University - Turkey
Dr. Brian Shaw	Manager, Center for Environmental Security, PNNL - USA
Professor Andrejs Silins	Secretary General, Latvian Academy of Sciences Latvia

LTC Robert Slockbower	Director, Joint/Combined Operations, Center for Strategic Leadership, U. Army War College USA
Mr. Brian Smith	Evidence Based Research, Inc. - USA
Mr. Gazne Soysal	Executive Director, Center for Strategic Research, Ministry of ` Foreign Affairs - Turkey
Dr. Bert Spector	Center for Negotiation Analysis - USA
Mr. Gary Vest	U. S. Department of Defense - USA

Attachment #3

Pilot Study Subgroup Structure

Presented by

Maj. Volker Quante

FAFORSE

Subgroup 1

Definition and Modeling

1. Update existing lists of serious conflicts in which con flicts over natural resources and the environment played a major role.

2. Development of criteria for assessing to which degree a conflict has been caused by environmental degradation and natural resource scarcities.

3. Elaboration of criteria for assessing the security risks associated with environmental problems.

4. Development of different categories of environmental problems according to the extent to which they are relevant to security.

5. Definition of indicators and reasonable thresholds of severity of environmental problems that indicate heightened danger of their causing or contributing to serious conflict.

6. Development of aq taxonomy for indicator-oriented data collection.

Subgroup 2

Definition and Develoented data collection.

1. Collection of data on a representative sample of environmental threats to security at different levels of conflict based on the results of the taxonomy elaborated in Subgroup 1.

2. Definition of early warning indicators and ways of integrating relevapment of a Database and a Decision Support System

3. Developing a decision support system.

Subgroup 3
Risk Analysis and Recommendations for Environmental Politics and Security Politics

1. Comparative threat assessment of major global and regional environmental problems in order to set priorities as regards their security relevance.

2. Integrated threat assessment for the NATO region as well as for other regions particularly relevant to NATO.

3. Evaluation and further development of selected environmental policy responses to environmental threats to security.

4. Evaluation and further development of selected security policy responses to environmental threats to security.

5. Elaboration of recommendations for improving and redesigning international institutions so as to address effectively environmental threats to security by supporting and strengthening sustainable development.

Topics to be Dealt with Beyond the Pilot Study

1. Investigation of the feasibility of establishing a regionally-oriented crisis management center (or centers) in order to use the decision support system more efficiently.
2. Development of recommendations for action plans and contingency plans for selected environmental threats to security.

Attachment #4

NATO/CCMS Pilot Study

Environment and Security in an International Context

Developing a Pilot Study Methodology

Background Paper for the Methodology and Modeling Subgroup Meeting,
Washington, DC, January 21-22, 1997

Environmental resource issues are significant to NATO, the North Atlantic Cooperation Council (NACC) and the Partnership for Peace (PfP) countries in and of themselves. Nonetheless, recognition that damage to these resources can destabilize relationships within and between countries poses potential security threats that direct the Pilot Study's focus.

The Pilot Study is grounded in several relationships between environment and security that have been borne out by the existing research literature on the subject. First, while a particular environmental problem may be only one of a larger number of contributors to a security threat, it is often a vital part of the equation and critical to developing effective short- and long-term policies and responses. _In fact, researchers have been unable to establish a direct causal link between environmental problems and the generation of violent conflict, in part, because the context is unique from region to region. Just as in traditional political and military analysis of the development of conflicts, it is the interaction of numerous significant issues between states that leads to mobilization and eventual armed action. In fact, many environmental threats never result in

conflict within or between states because the parties act to defuse the problems through conciliatory and interdependent activities.

Second, it is important to recognize that both security and environmental issues are sensitive to contextual factors, such as political, military and social situations, time frame, geographic location, and the particular environmental resources affected. Third, a scientific and technical understanding of the relationship between environment and security in a particular situation may suggest non-military, technological and capacity-building policy responses that can manage the environmental problem and directly ameliorate the security effects before they become destabilizing.

During the Ankara meeting, it was agreed that the Pilot Study must consider both past and future situations in which environment and security are linked (see Figure 1). This opens the door to a wide range of interesting opportunities for substantive questions to be dealt with and methodological approaches to be applied in contributions to the Pilot Study. We must *look back* historically at the effects of different environmental threats and responses under a variety of conditions. We must also *look forward* to anticipate the range of environmental threats that might emerge realistically in the future and gauge the effectiveness of various responses to them under different contextual scenarios. It is the context — the geographic, temporal, political, military, economic, social and cultural situation — within which these environmental threats become manifest or are perceived that security interests must be assessed and responses need to be developed.

The Pilot Study recognizes that the outcome of environmental threat scenarios can also vary, ranging from the cooperative to the conflictual — for example from the negotiation or conciliation of the risk, to threats to stability,

to outright provocation, to the possible use of force and violence. Much depends on how the risks are perceived, assessed and acted upon. The goal of the Pilot Study is to find and evaluate response options that can offer NATO/NACC/PfP policy makers the additional insight needed to mitigate the ultimate effects and outcomes of environmental threats on security.

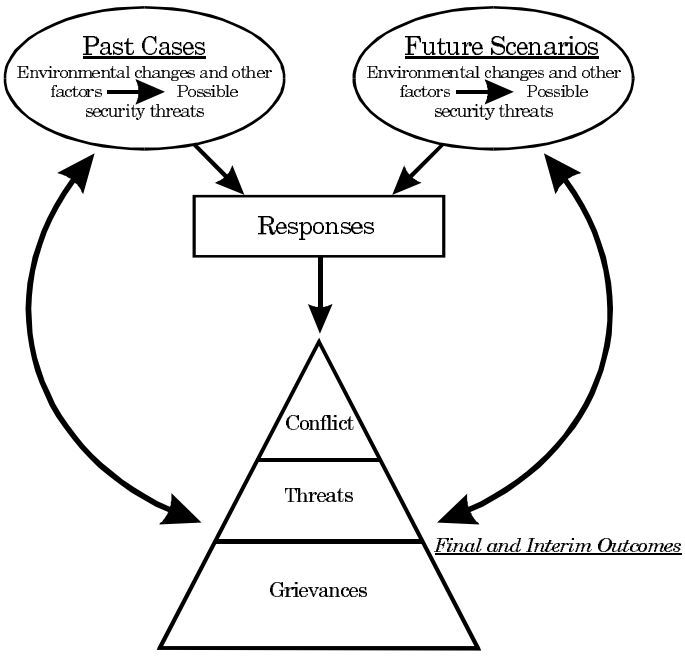


Figure 1.
Past and Future Environmental Threats, Responses, and Outcomes

The defining element of the proposed framework is that analysis begins with the identification or perception of environmental risks and threats to NATO security interests. If it is assessed that these risks surpass critical thresholds that indeed make them relevant to national or regional security, then the scenario must be evaluated within the richness of its political, military, economic,

social and cultural context. Then, alternative responses must be weighed to provide guidance on the most effective approaches to achieve acceptable outcomes. This framework suggests a four step methodology for development of the Pilot Study. Research contributions conducted at each step need to reflect a NATO focus and the goal of consensus building within the NATO community.

Step 1: Environmental Risk Studies

First, the environmental risks and threats must be fully characterized in terms of how they constitute or lead to a potential threat to security. Examples of specific environmental risks include resource scarcity, degradation, maldistribution, disasters and accidents. Such threats and their severity may vary, for example, by region and by the political and social situation. The major elements of these risk studies will be scientific and technical analyses of the physical environment. Depending on the regions selected, this may include direct sampling and characterization, compilation and evaluation of existing and current studies, or the study and characterization of remotely sensed data. It can also include policy analyses, systems analyses, systems engineering, risks assessment, risk management, decision analyses, and stakeholder involvement technologies and methodologies to address complex environmental challenges. A key factor in establishing the environmental characterization is the knowledge base in physical processes and technology performance and their interactions in complex systems. These studies must analyze (a) the physical and scientific aspects of the threat posed by the environment, (b) their political/military/social/cultural aspects, and (c) the extent to which the threats are manifest and real or perceived.

Step 2: Security Context Assessment

The second step in the analysis is to put these threats into the security context. Realizing that environmental issues are often linked with economic, political, social, cultural, and military issues that impact domestic or regional stability, how do they all interact and contribute to the security problem? To what extent are environmental factors the principal triggers? What are the secondary effects of environmental problems? For example, a decrease in water flow often means a reduction in hydro-electric power production. If one party is more dependent on that energy source than the other, what is the differential impact of the reduction on their economic, political, cultural and military relationships? How do these relationships affect the perception of the environmental threat itself? Does the impact affect domestic or regional stability and how much?

Step 3: Policy Response Studies

Comparative analyses of a wide variety of cases are needed to examine how different responses were used in the past or could be used in the future to manage particular types of risk. Systematic assessments of the effectiveness of such responses under different conditions must be carried out. The sensitivity of each response type to the initiating risk and to effective resolution or management of the risk needs to be evaluated. Some responses may be able to resolve the problem entirely, while others can only manage the situation. Some responses may be useful as preventive measures and others useful to contain the problem once it has emerged. Some responses are more likely than others to be acceptable to NATO/NACC/PfP policymakers. And some may be more appropriate than others to application in particular regions of the world or against different types of environmental risks.

To offer useful guidance for the implementation of policy, the Pilot Study must provide NATO leaders with a way to differentiate between immediate consequential actions and long term consequences that require measured diplomatic response. Guidance needs to be appropriate to the setting and context, the magnitude of the impact must be assessed, and the impact on NATO security interests must be gauged. For example, will NATO security be impacted directly? Will the security of individual members be threatened? Will the security of other treaty organizations or alliances that overlap with NATO be affected? Will there be an impact on regions external to NATO that are of strategic interest?

Step 4: Early Warning Indicators

It is important to identify, compare, evaluate and gather data on early warning indicators of potential environmental risks to generate the capacity to predict and, hopefully, prevent the escalation of such risks. Factors that portend or covary with potential environmental threats can encompass both environmental thresholds (for example, the average quantity of potable water required per capita or water pollution that reaches toxic levels) and non-environmental indicators (for example, extensive population migration into a region or military maneuvering in a region). Studies to identify such early warning indicators can take the form of reviewing historical cases, assessing the theoretical literature, and conducting correlational and causative data studies, for example.

Conclusion

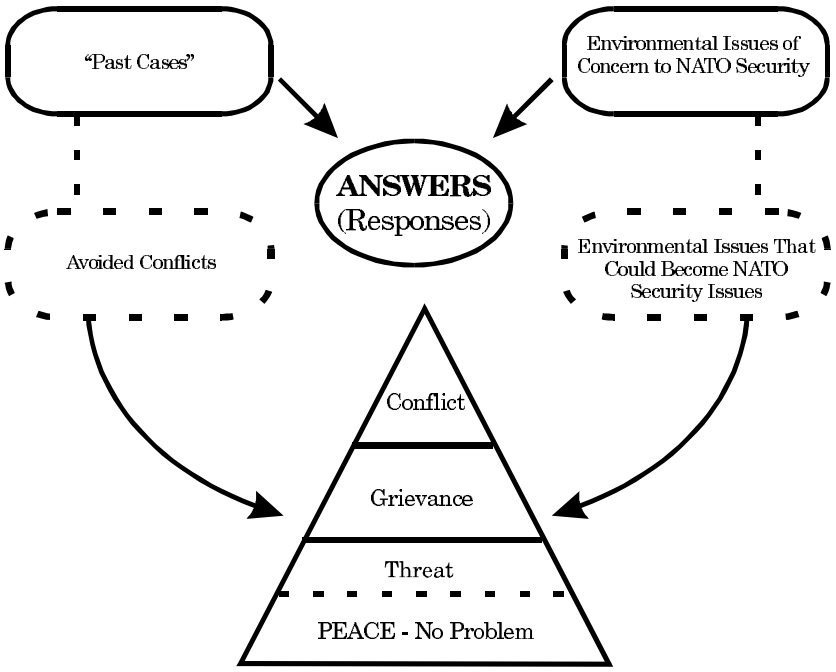
The accomplishment of each step necessitates a multi-method, multi-variate approach. In fact, differing analyses and methodologies applied to the same problem

and relationship would be encouraged to yield robust interpretations. The Pilot Study requires many different types of research contributions, including data collection, analyses of environmental thresholds, individual case studies, comparative case studies, correlational studies, aggregate data studies, and future scenario studies, among others. No individual country should "own" a methodology nor is a uniform methodology required for contributing countries. On the contrary, it is preferable to have a variety of models tested through this framework.

Attachment #5

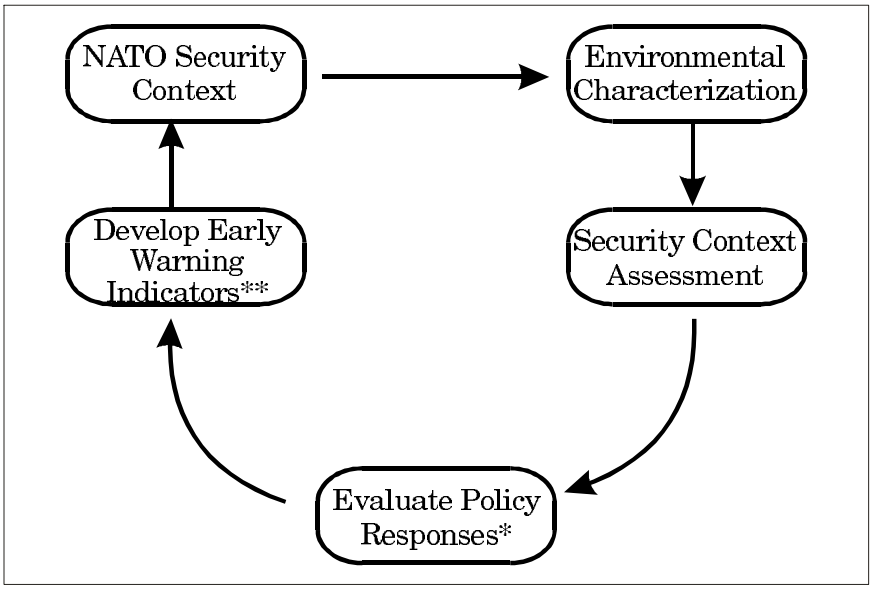
Subgroup 1: Definition and Modeling

Ankara Schematic Diagram



Attachment #6

Methodology Structure
Overall Framework



NATO Security Context

- What are the NATO security boundary conditions?
  - Geographic
  - Functional
  - Treaty interactions
- What policy goals are to be maximized?
  - Prevent conflict or reduce/manage instability?
  - Seek long-term or immediate results

Identify, Select and Characterize the Problem and Its Environmental Components

- How can the overall problem be identified, selected and characterized?
- How are the environmental problems perceived?
- As problems of:
  - Resource use patterns
  - Competing interests concerning resources perceived as scarce or degraded
  - Natural disasters
  - Accidental disruption
  - Ongoing latent or manifest conflicts
- How is this environmental risk characterized scientifically?

Security Context Assessment

- Are the environmental problems relevant to NATO security interests?
- Where is the problem most relevant geographically?
- Is the threat purely domestic? Can it go transboundary?
- How does the environmental risk interact with the political, social, economic, military and cultural context?
- Which serious conflicts have natural resources and/or the environment playing a major role?
- What are the potential criteria for assessing the degree to which a conflict has been caused by environmental degradation and natural resource scarcities?
- How can the security risks associated with environmental problems be assessed?
- To what extent are various types of environmental problems relevant to security?
- Does the threat affect domestic and/or regional stability, and how much?

Evaluate Policy Responses*

- Specific methodologies and issues under this heading will be addressed by Subgroup #3.

Develop Early Warning Indicators/Systems**

- Specific methodologies and issues under this heading will be addressed by Subgroup #2.

Attachment #7

Subgroup #1: Definition and Modeling Volunteers and Schedule of Taskings

Annotated Table of Contents

Introduction

Lead: U.S. - Evidence Based Research, Inc.

- Detailed annotated outline: TBD

NATO Security Context

Lead: U.S. - Evidence Based Research, Inc.
Partners: U.S. - Pacific Northwest National Laboratory
Germany: FAFORSE

- Initial draft due to the co-chairs: 15 April 1997
- Circulate amended draft to Subgroup #1 participants for comments: 10 May 1997
- Present final report to Pilot Study plenary: 20 May 1997

Environmental Characterization

Lead: U.S. - Pacific Northwest National Laboratory

- Annotated outline and partial draft due to co-chairs: 15 April 1997
- Circulate amended documents to Subgroup #1 participants for comments: 1 May 1997
- Present amended documents for review: 20 May 1997

Security Context Assessment

Lead: Germany - Ecologic
Partners: U.S. - Evidence Based Research, Inc.

- Detailed annotated outline, listing update and draft appendix due to co-chairs: 15 April 1997
- Circulate amended documents to Subgroup #1 participants for comments: 1 May 1997
- Present amended documents for review: 20 May 1997

Evaluate Policy Responses

- Being addressed by Subgroup #3

Develop Early Warning Indicators/Systems

- Being addressed by Subgroup #2

Attachment #8

NATO CCMS Pilot Study
"Environment and Security in an International Context"

Accident Emergency Warning System (AEWS) for the Monitoring of the Danube Water Quality

Dr. Corneliu A.L. Negulescu
Dr. Aurel Varduca

Presented by Dr. Corneliu A.L. Negulescu
21 January 1997

1. Introduction

In the framework of the Environmental Programme for Danube River Basin, the Accident Emergency Warning System (AEWS) has followed a series of important steps being, now at the point of finalization and implementation of its transboundary structure. Romania has already nominated a National System provided with a Principal International Alarm System (PIAC) compatible with the AEWS structure.

The Convention concerning the cross-border effects of industrial accidents, signed by 23 countries in Helsinki (Finland) in March 1992, has, as a main goal to promote an intergovernmental co-operation for the prevention, preparation and actions to be taken against the effects due to industrial accidents. For the aquatic environment, the Convention concerning the protection and utilization of

cross-border waters and international lakes (Helsinki, 1992) specified the particular way of action in case of transboundary accidental pollution.

This Convention and the Code of Conduct concerning the accidental pollution of the cross-border waters elaborated by the European Economic Community (EEC), represent a reaction to the accidents occurred in Sereso 1976 (dioxine), Mexico City 1984 (propane), Bhopal 1984 (methylizocyanate), Basel 1986 (insecticides), in order to assess the risks.

APPENDIX E

NATO SECURITY BOUNDARY ASSESSMENT

Alliance Security Frontiers in the New Security Environment

Brian D. Smith - Evidence Based Research, Inc.

Major Volker R. Quante - FAFORSE

Galian M. Sergen - Center for Environmental Security

Nestor Gounaris - NATO CCMS Fellow

1

The Change

- What are the NATO security boundary conditions?
  - Geographic
  - Functional
  - Treaty interactions
- What policy goals are to be maximized?
  - Present conflict or reduct/manage instability
  - Seek long-term or immediate results

2

Collective Defense

- Article 5

The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all and consequently they agree that, if such an armed attack occurs, each of them, in exercise of the right of individual or collective selfdefence recognised by Article 51 of the Charter of the United Nations, will assist the Party or Parties so attack by taking forwith, individually and in concert with the other Parties, such action as it deemsxz necessary,m including the use of armed force, to restore and maintain the seucrity of the North Atlantic area.

- Article 3

In order more effectively to achieve the objectives of this Treaty, the Parties, separately and jointly, by means of continuous and effective self-help and mutual aid, will maintain and develop their individual and collective capacityn to resist armed attack.

3

Resolution of Disputes by Peaceful Means

- Article 1

The Parties undertake, as ser forth in the Charter of the United Nations, to settle any international dispute in which they may be involved by peaceful means in such a manner that international peace and security and justice are not endangered, and to refrain in their international relations from the threat or use of force in any manner inconsistent with the purposes of the United Nations.

- Article 7

The Treaty does not affect, and shall not be interpreted as affecting in any way the rights and obligations under the Charter of the Parties which are members of the United Nations, or the primary responsibility of the Security Council for the maintenance of international peace and security.

- Article 8

Each Party declares that none of the international engatements now in force between it and any other of the Parties or any third State is in conflict with the provisions of this Treaty, and undertakes not to enter into any international engatement in conflict with this treaty.

Consultative Mechanisms

- Article 4

The Parties will consult together whenever, in the opinion of any of them, the territorial integrity, political independence or security of any of the Parties is threatened.

- Primary mechanism is the North Atlantic Council (ANC)
  - Head of State and Government Level
  - Defense and Foreign Minister Level
  - Permanent Representative Level (Weeikly Basis)

- Some NAC authority delegated to a number of committees and subcommittees

5

Other Security Issues

- The North Atlantic Treaty recognizes that security is not entirely a function of miolitary power or geopolictical strength.
- NATO needs to include an economic, and to a lesser extent, a social dimension to it concept of security.
- Article 2

The Parties will contribute toward the further development of peaceful and friendly international relations by strengthening their free institutions, by bringing about a better understanding of the principles upon which these institutions are founded, and by promoting condi - tons of stability and well-being. They will seek to eliminate conflict in their international economic poli - cies and will encourage economic collaboration between any or all of them.

6

The New NATO Strategy Concept

- Adopted new Strategic Concept in Rome in 1991;
- Recognizes changes in the security environment while reinforcing the basic principles of the alliance;
- Emphasis on stability and crisis management;
- Looks to threats from non-traditional sources and addresses Alliance security in expanded regional and global contexts;
  - Includes states in the Mediterranean and Middle East
- Addresses specific functional areas of concern siuch as proliferation and terrorism.

Impact on the Alliance

- Increasing recognition of NATO as a body for political consultation;
- Recognition of political, economic, social and environmental elements of security as well as tatditional defense elements;
- Cognizant of the need to resolve crises at an early stage through coordinating appropriate crises managment measures;
- Crisis managment measures will include appropriate consultation and decision-making procedures to this end.

8

NATO Forces in the New Strategic Concept

- The Alliance's military forces can complement and reinforce political actions within a broad approach to security;
- Contribute to the management of such crises and their peaceful resolution;
- Capability for measured and timely responses;
- Deter action against any Ally;
- Respspond to and repel any aggression.

9

Primarly Question for the Pilot Study

When Does an Environmental Issue Become a Security Issue in the Policy Context of NATO?

Environmental and NATO Security Boundaries

- The threshold for attention by the North Atlantic Council is when one of the member states perceives an environmental problem as having become a political problem, a political problem that has become a serious point of contention between one or several of the member states or between one or several of the member states and an outside party.

Proposed Changes

- Replace “security environment” with “security context”
- Recognize the evolution and transformation of current NATO structures;
- Recognize the increasing level of interaction between NATO and other multilateral organizations within the NATO area of responsibility

APPENDIX F

Recommendations to the NATO CCMS Pilot Study

Environment and Security in an International Context (Subgroup 1: Definition And Modeling, Part A: NATO Security Context)

Background

The task to analyze the NATO Security Context has been given to EBR / FAFORSE as part of an Overall Framework designed and approved at the 21-22 January Washington D.C. meeting of Subgroup #1 „Definition and Modeling“ of the NATO CCMS Pilot Study „Environment and Security in an International Context“. The Subgroup had been tasked at the 11-12 November Ankara meeting of the Pilot Study plenary with the development of a basis for structuring the follow-on work on the Pilot Study.

The NATO Security Context analysis was included to provide guidance to Pilot Study researchers on how environment and security issues relate directly to the security and structure of the Alliance and how the Alliance's interest in the field of environment and security is rooted in official Alliance's documents of highest level.

Current Political Development

At the threshold to the 21st century modern societies face new ecological challenges. The increase of man made environmental problems seems to have no limits thus these problems contain various risks for international security

and stability in general and for distinct regions in particular.

Simultaneously a new trend in international politics can be found: The nations continue to be basic actors in international politics, but globalization increases. Although supranational regimes' effectiveness is limited by nations' proviso of sovereignty, a relative shift of authority and power from nations to institutions and regimes takes place. Reason is the necessity to meet the looming new interior and exterior risks beyond classical military threats. Whereas - in the beginning - these new risks, increasingly including environmental threats, mostly have been perceived insufficiently, NATO has already begun facing these threats, especially after the end of the Cold-war period.

While military security and defense of military threats have ever been basic duty of a nation or an alliance, new fields of engagement, as for instance environmental protection (i.e. *environmental security* - in contrast to *environment **and** security*), have often been perceived and defined as national objectives. But events, activities, and situations countering these objectives, i. a. environmental threats in wider sense, are only partially institutionalized (for example with control mechanisms). In the field of international security below the threshold to direct military confrontation the nations can thus only find an answer in using supranational institutional cooperation. This has two reasons:

- Institutions and organizations base on formal and informal regulations, which cause a more reliable conduct of the member states. Reliability causes confidence, and confidence causes security.
- Institutions and organizations concentrate resources and as a result produce more effectiveness than single nations.

Origins of NATO and CCMS

The North Atlantic Treaty was signed on April 4, 1949, in Washington D.C. as a direct response to the perceived threat of Soviet aggression in Eastern Europe. The purpose of the Alliance was therefore to present a united and coordinated defense to deter any aggressor which may threaten one or several member states. The Alliance's partners sought increased security through collective and individual means and through regular and frank consultations. This collective security component of the treaty is embodied in Article 5, which states that „The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all (...)".

This obligation to mutual assistance is limited geographically in Article 6 to „an armed attack on the territory of any of the Parties in Europe or North America, on the Algerian Departments of France, on the territory of Turkey or on the Islands under the jurisdiction of any of the Parties in the North Atlantic area north of the Tropic of Cancer; on the forces, vessels, or aircraft of any of the Parties, when in or over these territories or any other area in Europe in which occupation forces of any of the Parties were stationed on the date when the Treaty entered into force or the Mediterranean Sea or the North Atlantic area north of the Tropic of Cancer".

In order to give the Alliance a new social dimension NATO established the *NATO Committee on the Challenges of Modern Society* (CCMS) in 1969. Relating to Article 2 NATO treaty which provides that member countries will contribute towards the further development of peaceful and friendly international relations by promoting conditions of stability and wellbeing NATO decided to strengthen the non-military cooperation between its member states and to

head towards the improvement of the quality of life in modern society.

Thus NATO itself all along understood its role as a not only military but comprehensive political Alliance, which combines security policy issues with other political aims and performs as a political consultative body.

Development of the Alliance up to Now

The above mentioned shift of authority and power from nations to institutions and regimes can be found in the field of environmental policy as well as of security policy (and of other - as for example economic - policies). The fundamental changes in the post-Cold war period require fundamental adaptations of the international institutions though. Larger political entities (EU, ASEAN), multilateral treaties (NATO, NACC, PFP, OPEC) and international organizations (UNO, OSCE, WTO, IMF) are concerned likewise. All these have different - not exclusive - member states and act in different geographical areas. This shows the need for coordination of efforts and single organization's initiatives and makes plain the complexity of the problems caused by diverging national interests.

Since 1989 NATO dealt best with these requirements for fundamental adaptation, inter alia by commitment to problems related to environment and security. In November 1991 NATO released a declaration of peace and cooperation as well as a new strategic concept. The common security policy bases now on three mutual reinforcing elements: dialogue, cooperation, and collective defense. These elements contribute to prevent or to manage crises threatening the Alliance's security: The NATO has continued to reassert that collective self-defense remains the primary role of the Alliance military forces. But, collective defense is now seen as only one dimension of

Alliance activities. The other part relates to crisis management and introduces new roles and missions for the Alliance, including peacekeeping or peace enforcement in support of U. N. or OSCE operations.

Challenges to the Alliance in the Future

Despite all testimonials and recommendations to form a comprehensive political alliance NATO reached the best integration on the military field yet - only the military capacities and the cohesion based on military integration (NAC, integrated command and control structures, multinational forces) give NATO the ability to accomplish its political function. But while the mutual commitment still has a major specifically European component - as one can see in notions like *European Security Architecture*, *European Security and Defense Identity*, *NATO's European Pillar* -, the most serious environmental threats are going to emerge in other regions (Africa, Middle East, Asia, especially China with its rapid growing industrialization).

NATO's future has an Asiatic-Pacific component as well as the classic Transatlantic one. The essential nation in the Alliance, the U.S., are a Pacific power as well as an Atlantic as the current debate on America's national interests shows. Highest priority in America's vital interests is to prevent a breakdown of global systems. One of these global systems is described as the environmental system. This shows the increasing importance of new security concerns as for instance environmental security. These potential threats are spread worldwide.

Most of the likely security threats don't fit to Article 5 NATO treaty. Despite NACC, PFP or widening NATO to the East, this raises the question, whether in a scenario like, for instance, a regionally limited environmental crisis without threat to NATO's vital interests all NATO member

would fulfill their treaty obligations in appropriate manner.

Capacities to Face the Future Challenges

Therefore, in late 1992 the NATO has developed the concept of the European security architecture based on a framework of mutually reinforcing institutions („interlocking“ institutions), encompassing the OSCE, NATO, the European Community, the WEU, and the Council of Europe. The idea was that the existing security organizations would work together and interact according to their specialties.

In addition, the OSCE has become a regional organization under Chapter VIII of the U. N. Charter, it has the authority to mandate peacekeeping operations in its area, though it does not have the authority to take on peace enforcement operations. But the problem is that the territory of OSCE-members comprise only the northern hemisphere.

But, what makes OSCE indispensable is at the same time restricting: number and heterogeneity limit its capabilities. Using a common security architecture for reducing the still upcoming differences between confirmation and reality as far as conflict prevention and management is concerned remains OSCE's most difficult task in the next years.

Questions of international security show a distinct tendency for using regional structures or ad-hoc alliances led by one powerful nation to resolve local and regional conflicts (including conflicts caused by environmental threats). That requires decisive action already in the forefield of concrete endangered security. NATO, too, has not yet found a final resolution for that problem. However, in contrast to the ad-hoc alliances, NATO's concept of combined joint task forces (CJTF) as presented in Brussels

1994 represents a substantial step to more flexibility and new forms of multi-nationality suitable for conflict prevention and crisis management.

CJTF concept reaches three aims:

- It is possible to conduct military operations beyond article 5 and out-of-area using varying participation of the NATO partners.
- NATO nations' forces can be employed under NATO command as well as WEU leadership.
- Non-NATO members - especially PFP partners - can actively participate in NATO's military actions for crisis management and conflict resolution.
- With the CJTF concept NATO has made the decisive step to flexibilize its possible reactions.

NATO's scope will clearly be widened beyond Europe and the NATO territory - but finding consensus on military actions (for example in a conflict caused by environmental threats) requires a new quality of coming to an agreement. Therefore in the future, NATO must focus on consensus-building favorable depending on urgency and implications of the respective security problem and not on single member's irritations and sensibility.

In the context of the currently happening NATO reforms (new command structure, new member states, closer ties between NATO and WEU, NATO-Russia-Charter / Euro-Atlantic Partnership Council EAPC / Enhanced Partnership for Peace EPFP, further development of the Strategic Concept) the Alliance will face fundamental changes over and beyond the year 2000.

It can be seized that with the step-by-step development on to flexible structures NATO turned in a direction which widened the spectrum of possible operations. In the long term this includes - if conflict prevention and crisis management had failed - the potential for effective military

reactions beyond security policy's challenges at the periphery of and beyond the NATO territory. The adaptation to new realities will not yet be performed though. To watch the structural and political change until it reaches a temporary fix point will cross the borders of this Pilot Study and requires therefore further study demand.

APPENDIX G

NATO CCMS Pilot Study
"Environment and Security in an International Context
Subgroup #1 "Definition and Modeling"

NATO Security Boundary Assessment
Alliance Security Frontiers in the New Security Context

13 June 1997

Brian D. Smith - Evidence Based Research, Inc.

Major (GS) Volker R. Quante - FAFORSE, Ministry of Defense, Germany

Galina M. Sergen - Center for Environmental Security, Pacific Northwest National Laboratory

Nestor Gounaris - NATO CCMS Fellow

NATO CCMS Pilot Study
"Environment and Security in an International Context"
Subgroup #1 "Definition and Modeling"

NATO Security Context:
Alliance Security Frontiers in the New Security Context

The Parties to this Treaty reaffirm their faith in the purposes and principles of the Charter of the United Nations and their desire to live in peace with all peoples and all governments.

They are determined to safeguard the freedom, common heritage and civilisation of their peoples, founded on the principles of democracy, individual liberty and the rule of law. They seek to promote stability and well-being in the North Atlantic area.

They are resolved to unite their efforts for collective defence and for the preservation of peace and security. They therefore agree to this North Atlantic Treaty:
-Preamble to The North Atlantic Treaty, Washington, DC, April 4, 1949

Background

The NATO Security Context is the first part of the Overall Framework designed and approved at the 21-22 January Washington, DC meeting of Subgroup #1 "Definition and

Modeling" of the NATO CCMS Pilot Study "Environment and Security in an International Context." The Subgroup had been tasked at the 11-12 November Ankara meeting of the Pilot Study plenary with the development of a basis for structuring the follow-on work of the Pilot Study.

The NATO Security Context analysis was included to provide guidance to Pilot Study researchers on how environment and security issues relate directly to the security and structure of the Alliance and how the Alliance's interest in the field of environment and security is underpinned by NATO's most central official documents.

Current Political Development

At the threshold to the 21st Century modern societies face new environmental challenges. The increasing number of anthropogenic environmental problems and their impact on natural processes increase the risks for international security and stability in general and for distinct regions in particular.

Simultaneously a new trend in international politics can be found: though nations continue to be the basic actors in international politics, they are increasingly enmeshed in a web of international regimes and institutions. Although the effectiveness of supranational regimes is limited by claims of national sovereignty, a relative shift of influence from nations to institutions and regimes has taken place. The shift is the result of the need to meet looming domestic and international risks aside from traditional military threats. Whereas these new risks increasingly include environmental threats, most have been given insufficient consideration. NATO has already begun facing these threats, notably during the post-Cold War period.

While deterrence and defense against military threats are a basic responsibility of any nation or security alliance, other

activities such as the protection of the environment (i.e. environmental security vs. environment and security), have often been perceived and defined as critical national interests. But responding to the obstacles, which threaten these interests, e.g., environmental threats in broader sense, is only partially institutionalized. In the context of national security, below the threshold of direct military confrontation, nations can respond to these threats in part by engaging in cooperation through supranational institution. This has two reasons:

- Institutions and organizations are based on formal and informal regulations, causing member states to act more predictably. Predictability breeds confidence, and confidence brings security, and;
- Institutions and organizations concentrate resources and as a result can be more comprehensive in their respond than single nations.

Origins of the Alliance - Collective Defense

The North Atlantic Treaty was signed on April 4, 1949 in Washington as a direct response to the perceived threat of Soviet aggression in Eastern Europe. The coup d'etat in Czechoslovakia, the forced isolation of Berlin and the involvement of Communist guerrillas in the Greek civil war raised the specter of a new threat in the East. National security was directly related to preserving the territorial integrity and the range of political independence guaranteed to states under the Charter of the United Nations and no state in post-war Western Europe could hope to guarantee its own security without assistance from the other states in the region or the United States. The North Atlantic Treaty was a direct outgrowth of the Truman Doctrine and the policy of containment embarked upon by the United States. The purpose of the alliance was to present a united and coordinated defense to deter any

aggressor which may threaten one or several member states. Deterrence would be maintained by fielding sufficient conventional forces and nuclear weapons to raise the costs to an aggressor above any potential benefit which may be gained as the result of an attack or a threat against a member state. The parties to the treaty sought increased security through collective and individual means and through regular and frank consultations with their allies. The collective security component of the treaty is embodied in Article 5, which states:

> The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all and consequently they agree that, if such an armed attack occurs, each of them, in exercise of the right of individual or collective self-defence recognised by Article 51 of the Charter of the United Nations, will assist the Party or Parties so attacked by taking forthwith, individually and in concert with the other Parties, such action as it deems necessary, including the used of armed force, to restore and maintain the security of the North Atlantic area.
>
> Any such armed attack and all measures taken as a result thereof shall immediately be reported to the Security Council. Such measures shall be terminated when the Security Council has taken the measures necessary to restore and maintain international peace and security.

NATO's basic geographic and functional boundaries are defined in Article 6 of the North Atlantic Treaty:

> For the purpose of Article 5, an armed attack on one or more of the Parties is deemed to include an armed attack:
>
> - on the territory of any of the Parties in Europe or North America, on the Algerian Departments of France, on the

territory of Turkey or on the Islands under the jurisdiction of any of the Parties in the North Atlantic area north of the Tropic of Cancer;

- on the forces, vessels, or aircraft of any of the Parties, when in or over these territories or any other area in Europe in which occupation forces of any of the Parties were stationed on the date when the Treaty entered into force or the Mediterranean Sea or the North Atlantic area north of the Tropic of Cancer.

Though one of the primary focuses of the treaty is on the deterrent value of collective defense, the member states are encouraged the develop and maintain their own military capabilities. Though they would be limited relative to the capabilities of the United States, the goal of maintaining individual capacity to defend themselves insured that each state maintained an active stake in the collective military and policy coordination of the alliance.

Origins of the Alliance - Consultations

The second focus of the North Atlantic Treaty is the need to resolve any disputes involving the member states through peaceful means. The treaty addresses this in Articles 1, 4, 8, and 9. Article 1 states:

> The Parties undertake, as set forth in the Charter of the United Nations, to settle any international dispute in which they may be involved by peaceful means in such a manner that international peace and security and justice are not endangered, and to refrain in their international relations from the threat or use of force in any manner inconsistent with the purposes of the United Nations.

Article 8 addresses the question of conflicting treaty commitments and establishes a groundwork for future international commitments undertaken by the member states.

> Each Party declares that none of the international engagements now in force between it and any other of the Parties or any third State is in conflict with the provisions of this Treaty, and undertakes not to enter into any international engagement in conflict with this treaty.

The member states of the alliance, though pledged to cooperative and collective action, do not forfeit any of the rights guaranteed to them under the Charter of the United Nations. As a organization of equal states, the North Atlantic Alliance recognizes the primacy of the state and its sovereignty. Member states are free to enter into treaties and compacts they may deem in their national interest with only their pledge that these agreements do not conflict with the basic principles of the North Atlantic Treaty. NATO does not hold a statutory veto over the affairs of the member states and does not have the same rights under the UN Charter as the member states. This relationship is reflected in Article 7:

> This Treaty does not affect, and shall not be interpreted as affecting in any way the rights and obligations under the Charter of the Parties which are member s of the United Nations, or the primary responsibility of the Security Council for the maintenance of international peace and security.

Adherence to these provisions is facilitated among the member states by frequent consultations. The interaction amongst the member states allows them to formulate and refine policies which may have a bearing on the relationship among the alliance members themselves or with other parties. Individual national policies are implemented with the approval or, at the least the acquiescence, of the other members of the alliance. The consultative mechanism is defined in Article 4.

> The Parties will consult together whenever, in the opinion of any of them, the territorial integrity, political independence or security of any of the Parties is threatened.

The main consultative body of the alliance is the North Atlantic Council, which meets at least weekly at the Permanent Representative level at NATO Headquarters in Brussels. Meetings of the North Atlantic Council are also held at the level of Foreign Minister, Defense Minister and the Head of State and Government level, each level having the same degree of authority. All member states are represented on the Council. The actions taken by the Council have the strength of policy for the alliance as a whole. The Council has also delegated some of its authority to a number of committees and subcommittees. The Council is described in Article 9:

> The Parties hereby establish a Council, on which each of them shall be represented, to consider matters concerning the implementation of this Treaty. The Council shall be so organised as to be able to meet promptly at any time. The Council shall set up such subsidiary bodies as may be necessary; in particular it shall establish immediately a defence committee which shall recommend measures for the implementation of Articles 3 and 5.

The North Atlantic Treaty also recognized that security was not entirely a function of military power or geopolitical strength. It was recognized that NATO would need to include an economic, and to a lesser extent, social dimension to its conception of security. Faced with a numerically superior threat in the East, NATO would have to rely upon more capital intensive strategies in its military confrontations and that required member states who were economically strong and resilient. This need is recognized in Article 2:

> The Parties will contribute toward the further development of peaceful and friendly international relations by strengthening their free institutions, by bringing about a better understanding of the principles upon which these institutions are founded, and by promoting conditions of stability and well-being. They will seek to eliminate conflict in their international economic policies and will encourage economic collaboration between any or all of them.

The North Atlantic Treaty succeeded and served as an enduring symbol in Europe of the global competition between the United States and the Soviet Union. NATO expanded from its original twelve members to include Greece and Turkey in 1952, the Federal Republic of Germany in 1955 and Spain in 1982. NATO policies continued to reflect the state of the US relationship with the Soviet Union and its attendant strategies, including massive retaliation, flexible response and the countervailing strategy. The warming of relations between the superpowers was marked in NATO by the Ottawa Declaration in June 1974. Arms control and disarmament negotiations became a major diplomatic focus of the alliance as NATO sought to reduce its nuclear stockpile while at the same time providing for the modernization of US intermediate systems with the deployment of the Pershing II and Ground Launched Cruise Missile. The Nuclear Planning Group Ministers Meeting at Montebello, Canada stated:

> Consistent with this policy the Alliance since 1977 has been conducting analyses aimed at assuring that nuclear weapons in NATO's armory are held to the minimum number necessary for deterrence, taking account of developments in conventional as well as nuclear forces.

Origins of the Alliance - CCMS

In order to give the Alliance a new social dimension, NATO established the *NATO Committee on the Challenges of Modern Society* (CCMS) in 1969. Article 2 of the North Atlantic Treaty provides that member countries will contribute towards the further development of peaceful and friendly international relations by promoting conditions of stability and well-being. NATO CCMS strengthens the non-military cooperation between the member states and strives to improve the general quality of life in modern society. Thus NATO not only sees itself as a military security organization but also sees its potential role as a comprehensive political alliance, which combines security policy issues with other political aims and functions as a political consultative body.

NATO and the New Security Context of 1991

The dissolution of the Warsaw Pact and the disintegration of the Soviet Union between 1989 and 1991 forced NATO to reassess its raison d'être and to adapt to a new and dynamically complex security context. The primary impetus behind NATO's collective security thrust had been removed as the Cold War ended. The end of the Cold War brought with it significant changes in the global security context, as well as to the European scenario. The removal of the constraints orchestrated by bipolar competition increased the complexity of the international system while at the same time introducing changes at a much faster pace than had been the case in the post-war era. In response to the question of security in the post-Cold War and in the new security environment, NATO's Heads of State and Government agreed in London in July 1990 on the need to transform the Atlantic Alliance to reflect these new changes while reaffirming the basic principles on which the Alliance had been founded. At the meeting of the North Atlantic Council Heads of State and Government meeting

in Rome in November 1991, a new Strategic Concept was accepted by the member states. The new Strategic Concept recognizes the changed security environment while reinforcing the basic principles of the alliance. It looks to threats from non-traditional sources and addresses Alliance security in expanded regional and global contexts. Paragraphs 8, 9, and 10 address the general changes.

8. The security challenges and risks which NATO faces are different in nature from what they were in the past. The threat of a simultaneous, full-scale attack on all of NATO's European fronts has effectively been removed and thus no longer provides the focus for Allied strategy. Particularly in Central Europe, the risk of a surprise attack has been substantially reduced, and minimum Allied warning time has increased accordingly.

9.In contrast with the predominant threat of the past, the risks to Allied security that remain are multi-faceted in nature and multi-directional, which makes them hard to predict and assess. NATO must be capable of responding to such risks if stability in Europe and the security of Alliance members are to be preserved. These risks can arise in various ways.

10. Risks to allied security are less likely to result from calculated aggression against the territory of the Allies, but rather from the adverse consequences of instabilities that may arise from the serious economic, social and political difficulties, including ethnic rivalries and territorial disputes, which are faced by many countries in Central and Eastern Europe. The tensions which may result, as long as they remain limited, should not directly threaten the security and territorial integrity of members of the Alliance. They could, however, lead to

crises inimical to European stability and even to armed conflicts, which could involve outside powers or spill over into NATO countries, having a direct effect on the security of the Alliance.

The new Strategic Concept emphasizes the impact of events in areas previously considered to be of reduced importance vis-à-vis the Warsaw Pact. As a result of the Gulf War, the Strategic Concept refers to the need to "maintain peaceful and non-adversarial relations with the countries in the Southern Mediterranean and Middle East." It also expressed Alliance concerns over some functional areas, notably the proliferation of weapons of mass destruction and terrorism. Paragraph 13 states:

13. Any armed attack on the territory of the Allies, from whatever direction, would be covered by Articles 5 and 6 of the Washington Treaty. However, Alliance security must also take account of the global context. Alliance security interests can be affected by other risks of a wider nature, including proliferation of weapons of mass destruction, disruption of the flow of vital resources and actions of terrorism and sabotage. Arrangements exist within the Alliances for consultation among the Allies under Article 4 of the Washington Treaty and, where ap - propriate, coordination of their efforts including their responses to such risks.

While it was important to recognize the changing security context and to broaden the geographic and functional areas of concern, the Strategic Concept addressed and recast the two principal focuses of the alliance - collective security and regular consultation amongst its member states. The emphasis on the defense dimension of security was reduced and a new, broader approach to security was introduced in Paragraph 25:

25. But what is new is that, with the radical changes in the security situation, the opportunities for achieving Alliance objectives through political means are greater than ever before. It is now possible to draw all the consequences from the fact that security and stability have political, economic, social and environmental elements as well as the indispensable defence dimension. Managing the diversity of challenges facing the Alliance requires a broad approach to security. This is reflected in three mutually reinforcing elements of Allied security policy: dialogue, cooperation, and the maintenance of a collective defence capability.

The importance of regular consultation amongst the members states is expanded, with the character and importance of consultation emphasized through dialogue and cooperation. As stated in Paragraph 30:

30. The Allies are also committed to pursue cooperation with all states in Europe on the basis of the principles set out in the Charter of Paris for a New Europe. They will seek to develop broader and productive patterns of bilateral and multilateral cooperation in all relevant fields of European security, with the aim, inter alia, of preventing crises or, should they arise, ensuring their effective management. Such partnership between the members of the Alliance and other nations in dealing with specific problems will be an essential factor in moving beyond past divisions towards one Europe whole and free. This policy of cooperation is the expression of the inseparability of security among European states. It is built upon a common recognition among Alliance members that the persistence of new political, economic or social divisions across the continent could lead to future instability, and such divisions must thus be diminished.

Paragraph 33 continues:

33. In these new circumstances there are increased opportunities for the successful resolution of crises at an early stage. The success of Alliance policy will require a coherent approach determined by the Alliance's political authorities choosing and coordinating appropriate crisis management measures as required from a range of political and other measures, including those in the military field. Close control by the political authorities of the Alliance will be applied from the outset and at all stages. Appropriate consultation and decision-making procedures are essential to this end.

The Strategic Concept also addresses the role of the Alliance's military forces in the new security context, including realigning their force structure and posture. The role of the military is addressed in Paragraph 43.

43. In the event of crises which might lead to a military threat to the security of the Alliance members, the Alliance's military forces can complement and reinforce political actions within a broad approach to security, and thereby contribute to the management of such crises and their peaceful resolution. This requires that these forces have a capability for measured and timely responses in such circumstances; the capability to deter action against any Ally and, in the event that aggression takes place, to respond to and repel it as well as to reestablish the territorial integrity of member states.

Paragraph 45 continues:

45. To implement its security objectives and strategic principles in the new environment, the organization of the

> Allies' forces must be adapted to provide capabilities that can contribute to protecting peace, managing crises that affect the security of Alliance members, and preventing war, while retaining at all times the means to defend, if necessary, all Allied territory and to restore peace....

Since its inception, the Strategic Concept has altered the role played by NATO in the security context in Europe. The founding of the North Atlantic Cooperation Council (NACC) provides a forum for the NATO allies to engage in regular dialogue and cooperation with the former members of the Warsaw Pact, the newly independent republics of the former Soviet Union and some of the neutral or non-aligned states. The Partnership for Peace allows states to cooperate on a more direct basis and has provided an avenue for interacting with those states that are not members of NATO or NACC. NATO has moved toward closer cooperation with the Western European Union, the Organization on Security and Cooperation in Europe, the European Union, and the United Nations. The declared goal of building a European Security and Defense Identity within NATO, but with the participation of all the Allies points to the Alliance's acceptance of the process of European integration. NATO involvement in the restoration of peace in Bosnia signaled a significant change in NATO's role in European security. Aside from being the Alliances first operational deployment of combat forces, it was also NATO's first deployment beyond the boundaries of the Alliance (see Article 6 of the North Atlantic Treaty) and it was the first time that NATO forces operated under the jurisdiction of the United Nations Security Council in the role of peacekeepers. The NATO-led Implementation Force (IFOR) includes 16 non-NATO countries from Europe, North Africa, the Middle East and Asia, demonstrating the Alliance's ability to coordinate and engage diverse

coalitions in the cause of peace. As the Alliance prepares to enlarge for the first time in 15 years, its ability to remain flexible and responsive to changing security conditions will guarantee it an important role in the new security context.

Development of the Alliance to Date

The aforementioned increasing influence of institutions and regimes can be found in the field of environmental policy as well as security policy. (Nota bene: It can also be found in every political field, as for instance the economic policy.). The fundamental changes in the post-Cold war period require corresponding adaptations to international institutions though. Larger political entities (inter alia EU, ASEAN, OAS, Arab League, OAU) multilateral treaties (inter alia NATO, NACC, PFP, OPEC) and international organizations (inter alia UN, OSCE, WTO, IMF) are also affected. All these have different, but not exclusive member states and act in different functional and geographical areas. This shows the need for coordination of efforts for the successful implementation of a single organization's initiatives and exemplifies the complexity caused by diverging national interests.

Since 1989 NATO has demonstrated it ability to adapt by addressing the challenges of environment and security. In November 1991, NATO released a declaration of peace and cooperation as well as its Strategic Concept. The common security policy is now based on three mutually reinforcing elements: dialogue, cooperation, and collective defense. These elements contribute to the prevention and to the management of crises threatening the Alliance's security: NATO has continued to reassert that collective defense remains the primary role of the Alliance's military forces. But it is now seen as only one dimension of Alliance activities. The other part relates to crisis management and introduces new roles and missions for the Alliance,

including peacekeeping or peace enforcement in support of UN or OSCE operations.

Challenges to the Alliance in the Future

Despite all attempts to form a comprehensive political alliance NATO reached its highest level of integration in the area of military cooperation - only the military capacities and the cohesion based on military integration (NAC, integrated command and control structures, multinational forces) give NATO the ability to accomplish its political function. But while the mutual commitment still has a major European component, such as in the European Security Architecture, European Security and Defense Identity, NATO's European Pillar, the most serious environmental threats are going to emerge in other regions including Africa, the Middle East, and Asia-Pacific.

NATO's future has an Asia-Pacific component as well as the classic Transatlantic one. The essential nation in the Alliance, the U.S., is a Pacific power as well as an Atlantic one as the current debate on America's national interests shows. Preventing the breakdown of global systems is a high priority for U.S. policy. One of these global systems is described as the environmental system. This shows the increasing importance of new security concerns such as environmental security. These potential threats are spread worldwide.

Most of these security threats, however, are not recognized under Article 5 of North Atlantic Treaty. Despite the development of NACC, PfP and the addition of new member states, the question is raised as to how NATO member states would react in terms of collective action under the NATO aegis, to a regional environmentally induced crisis which does not directly threaten the Alliance.

NATO, Environment, and Security

One of the basic questions which the "Environment and Security in an International Context" Pilot Study seeks to address is, "When does an environmental issue become a security issue in the security context of NATO?" The Strategic Concept addresses that question in its broad definition of security which explicitly cites the environment as one of the dimensions of security which NATO must address in the changing European security context. With reference to Article 4 of the North Atlantic Treaty, any environmental issue can be brought before the Alliance for the purposes of consultation with the other member states when a member state perceives the territorial integrity, political independence or security of any of the member states is threatened. The member states need to understand the problem as not only an environmental problem or a resource distribution problem but also as a political problem. It is necessary but not sufficient for the attention of the North Atlantic Council that one of the member states perceives an environmental problem as having become a political problem, a political problem that has become a serious point of contention between two or several of the member states or between one or several of the member states and an outside party.

The regular consultations between the member states at several levels and over a variety of issues provides the member states with the opportunity to resolve these issues at a lower level, thus only the most politically contentious will rise to the attention of the North Atlantic Council. As NATO expands the available fora for consultation and cooperation, to include NACC and the Partnership for Peace, environmental security issue arising between member states and non-member states should also be addressed or resolved in the same fashion.

Potential areas for consultation or cooperative mechanisms which are aimed at reducing tensions among concerned parties over environmental issues include:

- Development and coordination of data sharing and exchange arrangements for regional monitoring networks;
- Monitoring and verification of environmental treaty compliance.
- Development and coordination of common defense environmental practices;
- Consultations on reducing hazardous materials in weapon system life cycles;
- Assistance in training or technical assistance for environmental impact and risk assessment;

Consultative mechanisms will need to take into consideration the states adjacent to NATO's geographic frontiers who are not already participating in the available fora (refer to Article 6).

The Final Communiqué of the North Atlantic Council meeting in Defense Ministers Session in Brussels on 13 June 1996 demonstrated the Alliance's commitment to expanding the number of fora available for continuing dialogue when it stated:

> We welcome the progress achieved in the political dialogue with a number of Mediterranean countries as well as the programme of activities undertaken within its framework. We are convinced that this Mediterranean dialogue, which today is under way with Egypt, Israel, Jordan, Mauritania, Morocco and Tunisia, contributes to a better mutual understanding with a view to providing stability in the region. We will endeavor for our part to provide our support to the further development of this dialogue.

However, as NATO looks to more areas to engage in an enhanced dialogue and consultations, the Alliance must continue to address its partnership with Russia. The Final Communiqué from the 13 June North Atlantic Council meeting addresses the issue this way:

> In keeping with Russia's weight and importance, the development of a stable and enduring partnership between NATO and Russia is an essential element in the security of the Euro-Atlantic area. We welcome the important NATO-Russia consultative and co-operative steps to date and wish to expand their scope and deepen our relations with Russia both on the political and the military levels, based on both multilateral and nationally-sponsored activities.

The Communiqué continues by addressing NATO's relationship with Ukraine.

> We attach great importance to the Alliance's relations with Ukraine. We are convinced that an independent, democratic and stable Ukraine has an important part to play in reinforcing European stability.

As the inter-relationship among the political, economic, social, environmental and defense dimensions of security becomes more dynamic and complex, emphasis will be placed on cooperation with supra-national organizations, such as the UN, OSCE and EU, to introduce new mechanisms for the resolution of issues before they become threats to the "territorial integrity, political independence or security of any of the Parties."

Capacities to Face Future Challenges

In late 1992, NATO developed the concept of the European security architecture based on a framework of mutually reinforcing institutions ("interlocking" institutions),

encompassing the OSCE, NATO, the European Community, the WEU, and the Council of Europe. The idea was that the existing security organizations would work together and interact according to their specialties.

In addition, the OSCE has become a regional organization under Chapter VIII of the UN Charter, and has the authority to mandate peacekeeping operations in its area of responsibility, but it does not have the authority to take on peace enforcement operations.

However, what makes the OSCE indispensable, but at the same time restricts it, is the size of its membership and the heterogeneity of its members. Using a common security architecture for reducing potential differences between perception and reality in terms of conflict prevention and management remains OSCE's most difficult task in the future.

Questions of international security show a distinct tendency for using regional structures or ad-hoc alliances led by one powerful nation to resolve local and regional conflicts (including conflicts induced by environmental factors). That requires decisive action prior to the development of a credible threat to security. NATO, too, has not yet found a final resolution for that problem. However, in contrast to ad-hoc alliances, NATO's concept of combined joint task forces (CJTF) as presented in Brussels in 1994 represents a substantial step toward creating more flexible forms of multi-national action to support conflict prevention and crisis management.

CJTF concept reaches three aims:

- It is possible to conduct non-Article 5 out-of-area military operations using varying participation of the NATO partners.
- NATO nations' forces can be employed under NATO command as well as WEU leadership.

- Non-NATO members - especially PfP partners - can actively participate in NATO's military actions for crisis management and conflict resolution.

With the CJTF concept NATO has made the decisive step towards increasing the flexibility of its possible responses.

The NATO area of interest will be widened beyond Europe and North America, but finding consensus on out of area operations (for example in a conflict induced by environmental factors) may require a new approach to decision making. Therefore in the future, NATO needs to address consensus-building that is time sensitive and contingent upon the broader implications of the respective security problem, and less on single member's concerns.

In the context of current NATO reforms (i.e., new command structure, new member states, enhanced NATO and WEU ties, NATO-Russia-Founding-Act, Euro-Atlantic Partnership Council (EAPC) / Enhanced Partnership for Peace (EPfP), further development of the Strategic Concept) the Alliance will face fundamental changes over and beyond the year 2000.

It can be assumed that with the gradual development of more flexible structures, NATO will move in the direction of engaging in a broader spectrum of possible operations. In the long term this includes - especially if conflict prevention and crisis management have failed - the need for an effective military response to non-traditional threats to security at the periphery of and beyond the territory of NATO. Adapting to new realities will take time and coordinated effort on the part of the member states. The structural and political changes underway will continue beyond the conclusion of this Pilot Study and therefore require future study.

APPENDIX H

ENVIRONMENTAL SECURITY CONTEXT

- Ciohallenge Is To Define and Quantify Security Risk
  - Traditional Threats
  - Force Structure
  - Nontraditnal Threats
- How to Define and Quantify “The Environment”
  - Identifying
  - Selecting
  - Characterizing

Slide 1

PREVENTIVE DEFENSE: ENVIRONMENTAL CONTEXT

- Tension Reduction
  - Identification, Selection and Characterization

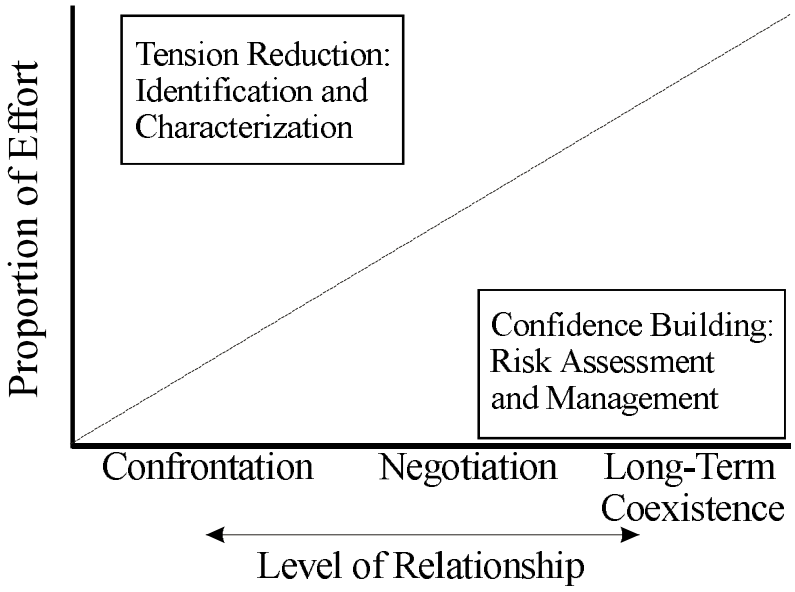
    Base Step in Understanding Threat Potential
    Essential in Understanding Response Potential

- Confidence Building
  - Risk Assessment and Environmental Management as Security Mechanisms

    Threat Reduction Through Preparation
    Environmental Management Implementation

Slide 2

Tension Reduction/Confidence Building Measures



Slide 3

Characterization

- Characterization Is the Basis of Risk Determination
  - Define Environmental Resources
  - Define Existing Pathways for Receptors
  - Describe the Adverse Environmental Conditions Observed or Reported
- Uncertainty and Data Gaps
  - Requirement for Cooperative Characterization

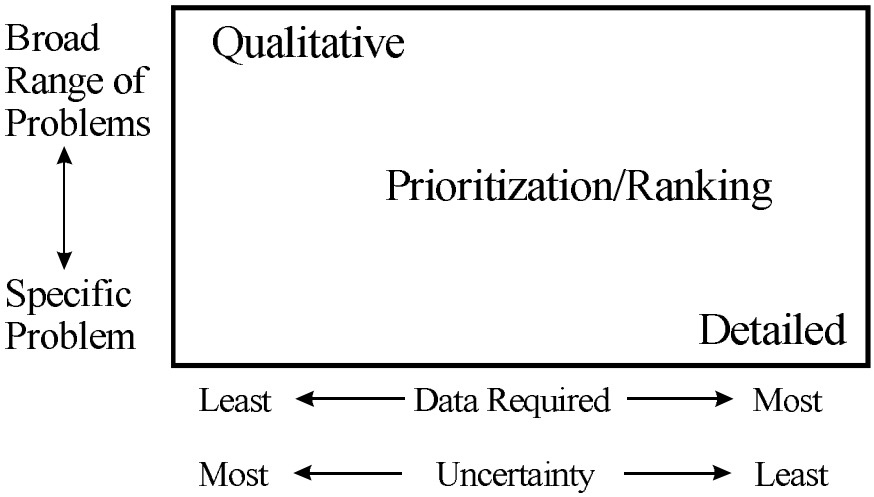
Slide 4

Risk Assessment

- Risk Analysis
  - Define the Magnitude of Risk to receptors
  - Describe the Impact
  - Public Perception Assessment
- Types of Risk Analysis
  - Qualitative
  - Prioritization/Ranking
  - Detailed

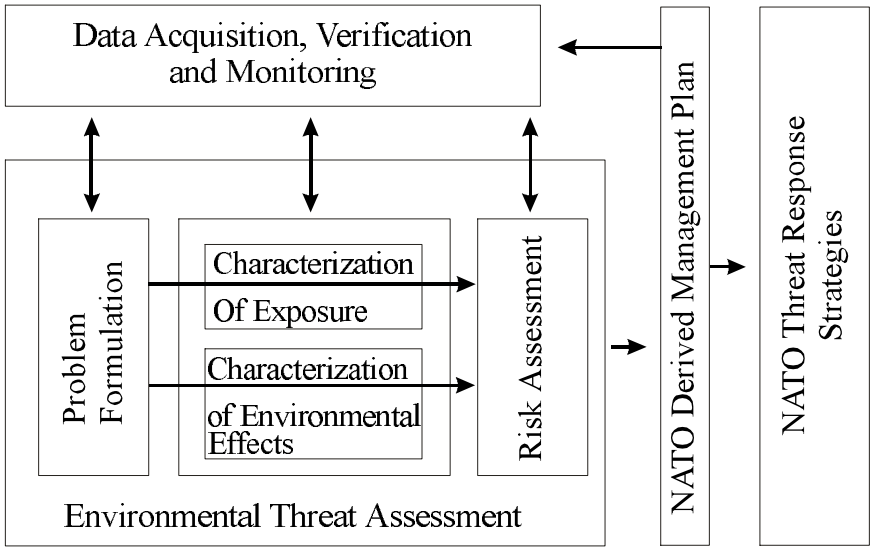
Slide 5

Types of Risk Analysis



Slide 6

International Context Framework



Slide 7

NATO KEY ISSUES

Environmental Security Issues Require Cooperative Decision-making

- Problem Formulation
- Characterization
- Risk Assessment
- Response Strategies

Requirement for Proactive Characterization, Risk Assessment and Management

- Preventive Defense

Slide 8

APPENDIX I

NATO CCMS Pilot Study

Environment and Security in an International Context

Subgroup #1: "Definition and Modeling"

Elaboration of Criteria for Assessing the Security Risks Associated with Environmental Problems

1. Introduction

It is well known that there is no direct, monocausal relationship between environmental stress (covering environmental degradation and resource scarcity) and serious conflict, but rather multicausal correlations. Furthermore there is no empirical proof that environmental stress directly leads to serious conflicts. Instead environmental stress is imbedded in a broader context of factors which contribute to or accelerate the origin of a serious conflict. Primary task of this section of the Pilot Study is therefore to elaborate on the contextual relationship between environmental stress, secondary social problems and framework conditions. In the following, these additional factors which, together with environmental stress, build the context in which a serious conflict is likely to occur, are going to be identified.

The structure of this section is as follows:

After mentioning the regional scope of the study (2), a concept in order to identify the links between environmental stress, secondary social problems, framework conditions and serious conflict is going to be worked out (3). The next task is to elaborate on the relevant secondary social problems, as there are migration, poverty, limited food availability, and health problems (4). Finally the framework conditions - political, economic, social and cultural factors as well as knowledge - on which the outbreak of serious conflict is likely to depend, are going to be mentioned (5).

2. Regional Scope

In the course of this section it is necessary to distinguish between different levels of conflict, that is domestic, interstate, and international conflict. To date empirical results show that environmental conflicts are mainly domestic. To serve the aim of this Pilot Study, the conditions under which these conflicts are likely to become transboundary, are going to be analyzed.

Environmental stress and its contextual factors have a geographic dimension. Up to now environmentally induced serious conflicts have been found to occur mainly in developing countries. On the one hand this is explained by unfavorable political, economic and social framework conditions, which make the development of peaceful patterns of environmental conflict resolution more difficult. Furthermore most of the developing countries are situated in geographical regions with very fragile ecosystems and therefore facing problematic natural conditions that are difficult to manage. However, in the course of this study,

the possibility of environmentally induced conflicts in the NATO region as well as in other regions particularly relevant to NATO is going to be analyzed.

3. Conceptual Work

General aim of this part of the Pilot Study is to identify the relevant variables and indicators that describe and explain the linkages between environment and security. As a result, a methodology for assessing the security risks associated with specific environmental problems under concrete circumstances should emerge. With this methodology an instrument for assessing to which degree a specific conflict has been caused by environmental degradation and resource scarcities and, to which degree environmental stress might cause serious conflict, should be obtained.

Whereas conflicts over natural resources might have a high potential of becoming serious themselves, the causal pathway from environmental degradation to violent conflict is in general indirect. Environmental degradation is also mostly neither the only nor the most important factor contributing to the emergence of serious conflict. Rather it is going to cause secondary social problems (as there are migration, poverty, limited food availability and health problems), which might become indirect causal factors of serious conflict. Secondary social problems are those problems, which would not exist without environmental stress as regarded in the context of the Pilot Study. Whether or not environmental degradation and /or resource scarcities will lead to the outbreak of serious conflict in a particular instance, is dependent on framework conditions (political, economic, social or cutural factors and knowledge and managerial capacities). These framework conditions influence all other elements of the model. They

build the foundation which environmental degradation and resource scarcities are or are not generated and perceived.

ther or not resource scarcities and/or environmental degradation, eventually via secondary social problems, will lead to the outbreak of serious conflict in a particular instance, is dependent on these framework conditions.

4. Secondary Social Problems

As developed in section 2 of this presentation, environmental degradation and/or resource scarcities can lead to secondary social problems, which, under unfavorable framework conditions, might lead to serious conflict. In the following the most important secondary social problems are going to be mentioned. However, even if these problems are treated separately, it has to be kept in mind that they are interconnected and might reinforce each other.

4.1. Migration within a State

The effects of migration, e.g. displacement within a state, need to be discussed. Population dynamics can lead to increased competition over scarce resources, to overflowing slums of the large cities and can therefore contribute to political instability. In the case of environmental stress, this political instability might aggravate the security situation of a country

4.2. Cross-border Migration

An interstate conflict might exacerbate in the case of *cross-border migration.* As *f*actors influencing the likelihood of migration-induced interstate conflict rising competition about natural resources in the country of

arrival (e.g. arable or grazing land, water) and traditional enmity between two countries will be put into consideration.

4.3. Poverty

Another problem that may feed back to political instability as well as environmental problems is poverty. Especially developing countries earning a large portion of their national income by agricultural production may loose part of their income as a result of, for example, land degradation or natural disasters. Additionally, large gaps in the distribution of income may aggravate social tension.

4.4. Limited Food Availability

Environmental degradation or soil salination may lead to limited food availability and famines, which in turn contribute to political instability. A well known example is Africa's Sahel where overgrazing, droughts, and soil erosion have caused famines, and where examples of violence have been numerous.

4.5. Health Problems

Health problems, especially if they are epidemic, may become security concerns, for example, if the balance between human beings and microorganisms causing disease is disrupted. Health problems will, however, mostly not directly lead to serious conflict, but through other social problems.

5. Framework Conditions

Finally the framework conditions, which influence the likelyhood of serious conflict, given environmental

degradation and/or resource scarcity, are taken into consideration. In how far the above-mentioned secondary social factors can lead to serious conflicts, depends on the configuration of these framework conditions.

5.1. Political factors

Political system

One important point is to analyze whether the *instability* of a government (e.g. due to the loss of executive means, loss of legitimacy) in combination with environmental stress can be a security risk for a country or a region.

Ethno-political factors

The mere existence of different ethnic groups within a state does not in itself necessarily lead to conflict. However their presence could be used as a pretext to build factions or treat different groups differently. In the case of environmental stress, political conflict between ethnic groups (e.g. struggle over access to resources or deliberate shifts in resource rights in favor of one group) would then create an additional security risk.

Institutionalized patterns of conflict-resolution

The focus here is on the existence of institutionalized patterns of conflict resolution within a state or between states (regimes, round tables etc.). It could be assumed that the absence of such commonly agreed upon patterns of conflict resolution contributes to the likelihood of an environmental problem becoming a security threat.

Level of interaction between states

It has to be analyzed whether the amount of peaceful interaction between states/societies alleviates the danger of violence in situations of environmental stress. The argument is that the more intense bilateral and multilateral interactions or regional and international integration in the area of environment, economic, foreign, developing and security policy are, the less likely is the occurrence of violence. This is even valid in the case of environmental stress.

5.2. Economic Factors

Economic Performance

A state's general economic performance is one aspect with relevance to the security context. There is empirical evidence that most serious conflicts occur in developing countries. The economic situation could lead to a serious conflict, when resources critical to survival are not available and cannot be imported or substituted.

Structural Heterogeneity

The existence of a *dual economy* (a marginalized rural sector existing alongside a modern industrial sector) represents an additional context factor that is of importance for the analysis. This dual economy can lead to *socio-ecological* heterogeneity with increasing marginal-ization of the rural sector, characterized by a high dependence on natural resources, in favor of the modern industrial sector (which over-uses the natural resources, e.g. water). In case of environmental stress this heterogeneity is likely to deteriorate a country's security situation.

5.3. Knowledge

Of equal interest is the *performance* of a political system (education of the civil servants, regulatory mechanisms in the central, regional or local government) in the handling of environmental changes. Furthermore a society's general ability/inability to gather knowledge, to learn and to build capacities that enable it to protect the environment is an important framework condition., Lacking knowledge and poor managerial capacities to mitigate or solve environmental stress might enhance the danger of serious conflict.

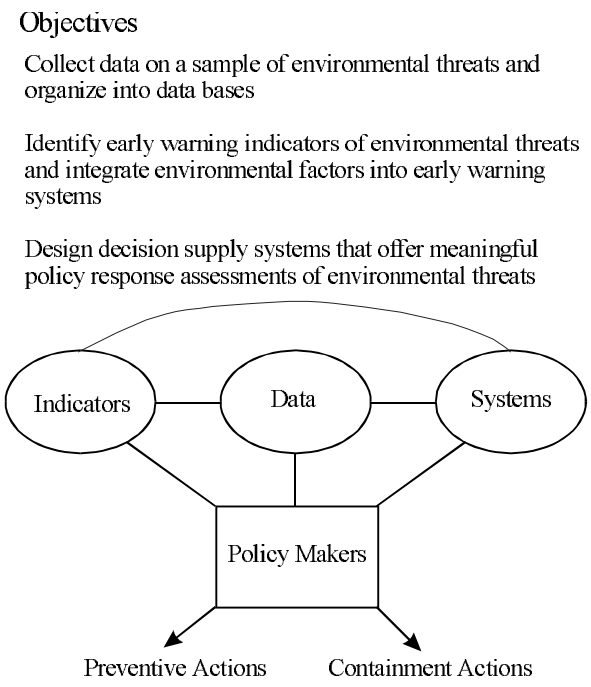
5.4. Social and cultural factors

The last focus in this section of the Pilot Study is on analyzing to which extent the loss of legitimacy of social structures (e.g. due to migration, urbanization) can contribute to security risks associated with environmental degradation and/or resource scarcities. It is of further interest to examine how this dissolution of traditional structures can lead to violence.

In addition a systems' *political culture* could be discussed, i.e. the discursive/authoritarian tradition, the participation of social groups, and how they deal with environmental stress.

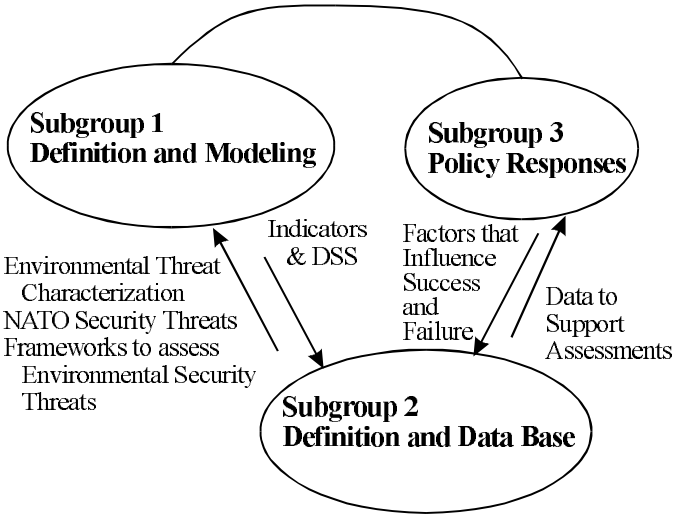
APPENDIX J

Definition and Data Base Development



Slide 1

Subgroup 2 Relationships



Slide 2

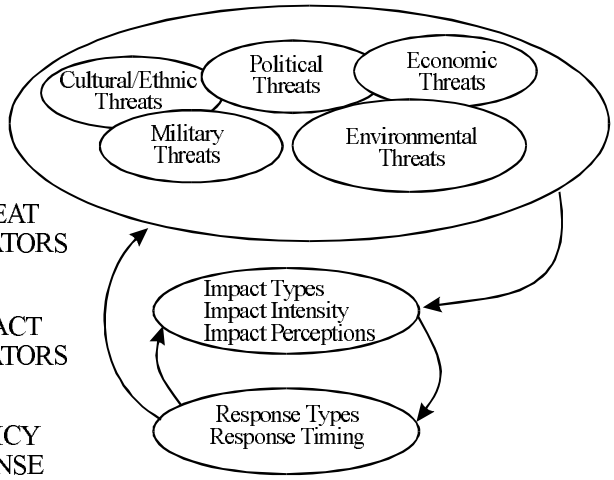
Subgroup 2 Tasks

Task 1. Indicators

OBJECTIVE:

Measurable indicators . . .
that monitor levels and detect changes over time . . .
on a range of factors . . .
covary with, predict or result from potential or actual environmental threats to security.

TYPES OF INDICATORS:



Slide 3

Task 1 Indicators (Continued)

1. Threat Indicators (Focus on levels, trends, thresholds, necessary conditions)

a. Scientific, physical and environmental indicators

aridification
Deficiency of soil moisture
Change in water quality
Ground water levels
Food production per capita

b. Economic, military, cultural/ethnic and political indicators

Riots, strikes, protests, civil strife
Fluctuation in GDP/economic activity
Migration of people
Change in energy prices
Unemployment rates
Access/allocation of potable water
State repression

Slide 4

Task 1 Indicators (Continued)

2. Impact Indicators (Impact of threat)

a. Impact Type — Indicators

↓	Cooperation	Joint Projects, resource sharing, regime development
	Domestic Instability	Economic problems, collapsed state institutions
	Regional Instability	⇓Transboundary migration, transbound - ary ethnic unrest
	Violent Conflict	Civil strife, rits, use of force

b. Impact Intensity

Low level disputes - Threats and provocative actions, but below threshold
High profile disputes - Above threshold

C. Impact perceptions

NATO security interests
Regional sensitivies
Immediacy of threat
Severity of threat

Slide 5

Task 1 Indicators (Continued)

3. Policy Response Indicators

Types	Indicators
Military	Peacekeeping, military/police actions
Technological	Capacity building
Political, Economic, Social	Institutional strengthening, medication, negotiation/diplomacy, NGO interventions

INFORMATION SOURCES FOR INDICATORS:

Theoretical models
Empirical research

POSSIBLE PROJECT SOURCES:

Baechler (ENCOP) Brecke (Georgia Tech)
Homer-Dixon (University of Toronto)
Elhance (SSRC,NY) IIASA (Austria) Woodow Wilson (Center Smithsonian)
Gleditsch (NATO) Advanced Research Workshop)
Gurr (University of Maryland)

Slide 6

Task 2. Data Bases

Three data bases:

- Principal indicators of environmental threats over time across countries and regions
- Sampling of historical cases in which environmental factors have been prominent in threatening security
- International environmental regimes that might facilitate future conflict resolution

1. Indicator Data Base

   Track changes in key indicators
   Focus on countries/regions over time
   Identify critical turning points/threshold breakthroughs

2. Historical Data Base

   Track common set of indicators across causes
   Representative sample: Cases with environmental threats AND violent and non-violent conflict outcomes
   Allow for comparative analysis across cases

3. Regimes Data Base

   Focus on regimes
   Track data on regional and international structures, institutions and procedures establish to manage and avert environmental threats/disputes
   Track data on regime capabilities in dispute settlement, negotiation, mediation

Slide 7

Task 3. Decision Support Systems

OBJECTIVE:

- Integrate indicators, data, and decision needs of policy makers to support policy response decisions
- Provide support to prevent or contain/mitigate conflict

Create Awareness
Identify low level disputes before they escalate
Forecast/early warning
Recommend successful options

EXAMPLES:

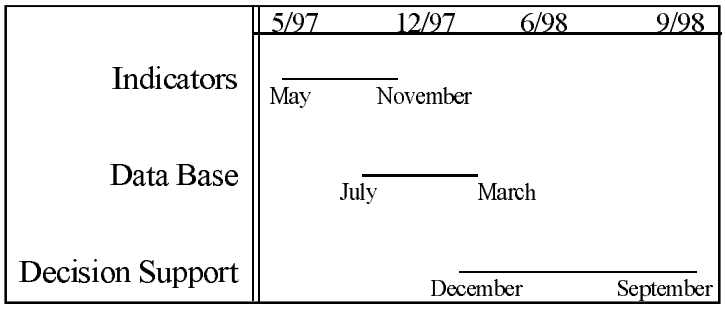
- Forecast the onset of threatening situations
- Describe the nature of such threatening situations
- Recommend reasonable options to respond to such situations
- Identify international agreements, regimes and organizations that can help to mitigate existing or future problems

PRODUCTS:

- Design systems
- Investigate methodologies and technologies
- Evaluate mechanisms to communicate results to policy makers

Slide 8

Proposed Work Plan



Agreement on objectives and tasks?
Critical milestones?
Final products?
Interim meetings?
Potential contributors?
Possible data sources?
Mechanisms for communication and sharing data?
Organizational issues?

Slide 9

APPENDIX K

NATO CCMS Pilot Study
Environment and Security in an International Context
Subgroup #3: „Policy Responses“

Assessment of Environmental Security Threats and Policy Responses for Preventing Environmentally Induced Conflicts

Based on the „Security Context Assessment“ in Subgroup # 1; C the optional policy approaches in the field of environmental, development, security and foreign policy are to be discussed in the Subgroup on Policy Responses. The emphasis of the Pilot Study in this respect is on preventive measures to avoid the occurrence of environmentally induced conflicts. However, before such a discussion can take place in a meaningful way, the environmental problems as well as the regions that are the most relevant in the context of environment and security need to be identified. In the following, the substantive and regional assessment of environmental security threats precedes the discussion of optional policy approaches that need to draw heavily on the results of the assessment.

1. Assessment of Environmental Security Threats

The assessment of environmental security threats needs to address two basis questions: (1) Which are the most important environmental problems in terms of their security relevance, i.e. in the context of environment and security in an international context? (2) To what extent will the NATO region as well as other regions relevant to NATO be threatened by security risks that have been caused by environmental problems? Thus, there are distinguishable substantive as well as regional components of the threat assessment to be carried out.

1.1 Comparative Threat Assessment of Major Global and Regional Environmental Problems

The substantive component of the assessment of environmental security threats is to consist of a comparative assessment of major regional and global environmental problems that might lead to security problems. The work to be done in this context is heavily dependent on the reults of Subgroup 1, especially 1 B. First of all, a number of relevant environmental problems to be included in the comparative threat assessment has to be selected. Environmental problems to be investigated might include climate change, depletion of the ozone layer, loss of biodiversity, desertification, geforestation, “classical” air pollution, water pollution and scarcity, decline of fish stocks and others. A final selection of the cases should be based on a pre-assessment of the relevance to international security of a given problem against the backdrop of the factors identified in Subgroup 1 B and C.

The same factors have then to be checked systematically in comparing the security relevance of the selected environ - mental problems. One way of doing the comparative threat assessment would thus be to prepare case studies on the se - lected environmental problems in which the relevant

factors identified by Subgroup one as having a bearance on the security relevance of a problem would be investigated. In a second step the short case studies on the security relevance of selected environmental problems would be used for comparison. On the basis of the common framework of all the case studies provided by the common set of factors to be dealt with, it would not be possible to conduct a statistical analysis, but rather a structured focused comparison. The result of this step would be the identification of the most serious global and regional environmental problems from the perspective of security.

1.2 Integrated Regional Threat Assessment

Drawing on the work of Subgroup 1 as well as on the results of the substantive comparative threat assessment described in the previous sub-section, the integrated regional threat assessment involves a twofold task. First, it needs to be assessed to which degree the NATO region will be threatened by environmentally induced conflicts, taking into account the sum of environmental problems investigated in the previous sub-section. Second, the regional threat assessment will require identifying those regions relevant to NATO that are most prone to be the place of environmentally induced conflict, again taking all environmental problems investigated in the previous sub-section into account in an integrated manner. Identifying the regions most relevant to NATO in the first place will hopefully be possible based on the NATO security context assessment carried out by Subgroup 1.

This analysis will not focus on single environmental problems, but will try to take into account the whole amount of environmental stress to specific regions. Thus, for all the regions that are deemed relevant it will be checked to which degree the different environmental

problems identified above will pose environmental security threats. The total environmental security threat faced by any specific region might then be described as the sum of the risks flowing from the different relevant environmental problems plus any feedback effects existing between them. The result of this analysis will be an order of regions according to their affectedness by environmental security threats.

2. Policy Responses for Preventing Environmentally Induced Conflicts

In principal, environmental and development policy options can be distinguished from foreign and security policy options as regards „Environment and Security in an International Context". Environmental and development policy are of primary importance as long as no serious conflict between actors has emerged and there is time to address the underlying environmental as well as social, economic and political problems. Additional instruments for conflict prevention are provided by foreign and security policy and especially foreign policy plays an important role with regard to the environment (foreign environmental policy), as is evidenced, for example, by the Annual Report on Environmental Diplomacy recently published by the US Secretary of State. However, once a serious potential for hostilities has resulted from underlying factors like environmental problems, possibly interacting with other specific conditions, foreign and security policy options become predominant. Therefore, the following section will point to environmental and development policy options, before foreign and security policy will become the subject of analysis.

Throughout the analysis, it should be useful to distinguish three different levels of policy activities. First of all, policy initiatives can be taken at the *global level* potentially

involving countries (and possibly other actors) from all over the world. Second, activities might be agreed upon and undertaken by groups of countries cooperating at a *regional level*. Finally, action can also be taken in a *bilateral context* with two countries cooperating. At which level policy initiatives are undertaken is depending on several factors, not least the interests of the parties concerned, their general political relationship and cohesion, but also the nature of the problem to be resolved. In particular, it has been pointed out that the level at which a solution is sought should correspond somehow to the extension of the problem. Thus, global problems could be addressed by action on all levels, while regional issues could most appropriately be countered at the regional level.

Generally, various policy options exist at the domestic level as well. Especially the sound management of resources and a vital societal system are influenced decisively by domestic policies of the respective countries, and most environmental problems are caused by domestic action. However, taking into account this additional level might exceed the scope of the Pilot Study. Thus, the following outline focuses on the international aspects of the available policy options.

2. Environmental and Development Policies

Environmental policy, in general, refers to political action to prevent and solve environmental problems. It is thus related directly to the good management of natural resources. In the context of environment and security, effective environmental policy aims at making use of natural resources in a sustainable manner so as to avoid any damage to the environment that could contribute to serious conflict.

It has been acknowledged, though, that sound environmental management is closely related especially to social

and economic matters as is evident from the discussion about „sustainable development". It is therefore obvious that sound environmental policy is dependent on, and interrelated with appropriate development strategies. In contrast to environmental policies, development policies aim predominantly at social, economic, and political factors. These factors can either reinforce or mitigate the potential for conflict emanating from environmental problems. In the context of environment and security, sound development policy would thus, besides the general aim of contributing to the improvement of environmental conditions, have to make sure that no reinforcing, „vicious" circle is generated which degenerates the environment as well as the social and economic basis of peace. With respect to environment and security, successful development policy can thus be seen as providing the room for environmental policy intervention that could hardly be successful under conditions of social unrest and economic decline.

Because of the international focus of the Pilot Study and because of the strong international dimension of most of the problems discussed under the heading of environment and security, the focus of the discussion on environmental and development policy options is to be put on the international level, especially on international institutions.

International environmental policy is generally made within different fora and makes use of varying instruments. Sovereign countries (and also non-state actors) meet within varying international organizations, conferences of parties to different treaties, ad-hoc conferences and more informal meetings to deliberate on international environmental policies. They make also use of more informal or low-level channels like embassies, country visits etc. to get in touch on various environmental issues. Action taken in these contexts comprises non-legally binding instruments like declarations,

resolutions etc., that may serve to stress and make political commitments, as well passing more binding common decisions and treaties. Decisions taken may result in direct action like conducting resource transfer projects etc.

Environmental policy in this sense is generally confronted with three major problems. First, because no central authority exists in international politics, countries have to accept measures voluntarily, thus giving rise to fears of agreements on the least ambitious program. This problem of standard setting is, second, complemented by an implementation problem that is also rooted in the horizontal character of the international system. There is no global executive that would be empowered to enforce any international regulation or decision. Finally, the problem of coordination between different international areas of international environmental policy has become more severe with the growth in the number of organizations and other fora dealing with the environment.

The section on environmental and development policy options will review the current situation and possibilities for incremental reform with respect to international environmental law and regimes and bilateral policy options as well as international organizations. In addition, because of the growing importance of non-governmental actors their role and potential can be evaluated. Finally, various suggestions for a more fundamental restructuring of the system of international environmental institutions are to be analyzed against the backdrop of the sense of urgency that the security relevance of environmental problems might inject in the discussion. In total, the focus of the analysis is largely dependent on the conclusions drawn in Subgroup #1 of the Pilot Study and the results achieved in the first part of the work of this Subgroup concerning the major problems and problem regions with respect to environment and security.

2.1 International Environmental Law and Regimes

The body of international environmental law has grown substantially over the last decades. Leaving aside the aspect of customary law that evolves by „custom“ and is thus not easily influenced by policies, international environmental law consist of largely unbinding declarations of principle, resolutions etc. („soft law“) as well as of binding international treaties („hard law“).

Regarding international environmental law and regimes, the three major problems connected with international environmental policy have been found to be especially valid. It might be investigated how law making can be improved and accelerated. Proposals that build on existing means include the enhanced use of selective financial, economic, technological and other incentives, the differentiation of commitments according to differentiated responsibilities and capabilities and the use of majority decision making.

Moreover the analysis might investigate by which means the implementation of international environmental agreements might be strengthened and how the increasing competition and overlap between different regimes as well as between regimes and international organizations can be dealt with. This might include organizational reforms dealt with in the previous section. With regard to implementation, however, several specific proposals exist, including (1) accelerating the application of international environmental agreements by using a provisional acceptance procedure, (2) the enhanced use of soft law options in order to avoid cumbersome national ratification, and (3) making more extensive use of „carrots and sticks“ during the implementation process, including strengthened efforts to build capacities in countries that lack the ability to implement.

Drawing on the analyses done within Subgroup #1 and the first part of Subgroup #3, it will be possible to identify the environmental problems and the regions most relevant in the framework of environment and security. This might lead to recommendations regarding priority areas for action regarding specific environmental problems because of their security relevance as well as regarding selected regions because of their affectedness by environmental security threats.

2.1.1 Global Environmental Agreements

International agreements in specific environmental issue-areas build the basis of what is commonly referred to as international environmental regimes. Several environmental agreements/regimes of global scope have by now been established, including, inter alia, the Montreal Protocol on Substances that Deplete the Ozone Layer (1987), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989), the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters (1972), the International Convention for the Prevention of Pollution from Ships (1973) and its 1978 Protocol, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973), the International Tropical Timber Agreement (1983), the United Nations Convention on Biological Diversity (1992), the United Nations Framework Convention on Climate Change (1992), and the Convention on Desertification (1994).

The evaluation of policy options with respect to these agreements will rely heavily on the results arrived at in Subgroup #1. Beyond the general questions with regard to standard setting and implementation in the framework of these agreements, the analysis might derive certain

priority areas for action based upon the comparative assessment of the security relevance of different environmental problems to be conducted in the first part of this analysis of Subgroup #3. As a result, recommendations may be elaborated on the increased use of mechanisms facilitating standard setting and strengthening implementation within specific regimes dealing with environmental problems that appear to be particularly security-relevant. Because of the density of international regimes at the global level less likely but still possible, the assessment of the security relevance of selected environmental problems to be conducted in the first part of the work of Subgroup #3 might also lead to recommendations concerning the establishment of new international regimes.

2.1.2 Regional Environmental Agreements

It has been suggested that regional cooperation might provide a more promising starting point of international law-making in the field of the environment because there are generally less divergent conditions and interests between regional partners and the level of cooperation might be closer to the actual problem dealt with. A number of regional environmental agreements like the Geneva Convention on Long-range Transboundary Air-Pollution (1979) and the Protocols thereto, several fisheries' agreements and conventions for the protection of several regional seas exist. Also, there are agreements on the use of scarce natural resources, including water, and there is room for more relevant agreements.

Drawing on the results of Subgroup #1 and especially the part one of the work of Subgroup #3, it should be possible to derive some conclusions regarding the regional areas and environmental issues that require an enhanced effort in order to counter effectively the threat of environmentally induced conflict. Especially the integrated regional threat

assessment and the assessment of major regional environmental problems to be conducted by Subgroup #3 might help determine regions where environmental security threats are most severe and thus the need for action is most urgent. It might be explored if the existing environmental security threats warrant new agreements or the strengthening of existing agreements in terms of standard-setting as well as implementation. The discussion might also include bilateral agreements and cooperation.

2.2 Non-Governmental Options

The role of non-governmental actors in international environmental policy has increasingly been highlighted and emphasized in recent years. This applies to business as well as to environmental citizen groups. The importance of the non-governmental actors in environmental policy is not least due to the fact that environmental problems are not only caused by government action, but also by the behavior of individual and societal actors. Given the limited capacity of governments to influence the relevant behavior, effective environmental policy is dependent on active involvement and participation by societal actors.

The growing importance of non-governmental actors can be experienced at relevant international governmental meetings in which they play a prominent role as experts and lobbyists as well as through their activities directly influencing the state of the environment. For example, ecologically-oriented businesses have joined forces in promoting environmentally benign technology and services. Also, innumerable grass-roots initiatives and larger environmental non-governmental organizations have helped to preserve the environment all over the world. They have done so by taking local initiatives as well as by addressing environmental problems of international

concern by also cooperating across borders, sometimes on a global scale.

Proposals have been put forward to strengthen the involvement of non-governmental organizations in the natural resource management. They refer to strengthened rights of participation in intergovernmental bodies as well as to an enhanced reliance on these actors in the implementation of environmental policy objectives. It may be worthwhile exploring the potential of such reforms for addressing more effectively relevant environmental problems in the context of the debate on environment and security. Whether a strengthening of the role of non-governmental actors can contribute to mitigating environmental security threats will not least depend on the results of the assessment of the security relevance of selected environmental problems and the affectedness by environmental security threats of different regions. If the results of this assessment lead to the conclusion that non-governmental actors have a considerable potential in the priority areas identified, this might support calls for strengthening their role.

2.3 International Organizations

As indicated in the introductory section, the discussion on international organizations is to be subdivided into an analysis of organizations of global scope and regional organizations.

2.1.1 Organizations of Global Scope

At the global level, the UN is the principal organization dealing with environmental problems. In this respect, the United Nations Environment Programme (UNEP) is the only international organization exclusively concerned with the environment. Since the Rio Earth Summit, the

Commission on Sustainable Development (CSD) has become the major international forum for deliberations on how to strengthen sustainable development on a global scale. The Rio Earth Summit has also led to reforms and a re-structuring of the UN headquarters in New York in order to give concerns for sustainable development a stronger voice. The record of these organizations has, though, been mixed.

There are various other members of the broader UN „family" the work of which is more or less directly related to environmental issues and sustainable development. Of relevance in this respect are, inter alia, UNIDO, FAO, ILO, IMO, WHO, WMO, GATT/WTO, UNCTAD and UNDP, the principal UN body in the field of development policy. Which out of the wealth of international organizations relevant to environment and development need to be investigated in more detail in the context of environment and security might be determined after the assessment of the security relevance of selected environmental problems to be conducted by Subgroup #3 also. However, UNEP and the CSD should probably be subject to analysis anyway.

Against the backdrop of the discussion on international environmental law and regimes, it needs to be determined which additional contribution the selected international organizations can make to solving the problems of international environmental policy mentioned above so as to mitigate the environmental security threats found to be most severe. This discussion might involve the evaluation of options for incremental organizational reform and the enhancement of existing capacities (How could UNEP be made to confront environmental issues so as to prevent effectively environmentally induced conflict?).

2.1.2 Regional Organizations

A wealth of organizations of regional scope may be evaluated. NATO, the EU, ASEAN, the UN Regional Economic Commissions, the Nordic Council, OAU, MERCOSUR, OSCE and others have relevant capacities and competences and may prove relevant in this context. Given the enormous number of candidates for investigation, it should be natural to put special emphasis on the options available to NATO (and NACC and PfP) in the framework of the Pilot Study.

In addition, it is to be reviewed which of the regional organizations are of special relevance in the context of environment and security. This review will, again, have to rely heavily on the integrated regional threat assessment as well as the comparative threat assessment of selected environmental problems. On that basis, it will be possible to identify those regional organizations responsible for regions especially prone to environmentally induced conflict and concerned with environmental problems found to have a particularly high conflict potential.

Again, it should be assessed to which extent and how the selected regional organizations do and can make a contribution to mitigating the relevant environmental as well as social, economic and political problems that goes beyond what can be reached by other means, e.g. options of international environmental law and regimes dealt with previously. As a result, recommendations for strengthening and re-focusing the efforts of regional organizations so as to counter effectively environmental security threats may be derived. The analysis might also lead to recommendations for limited incremental organizational reform.

2.4 New International Institutions ?

If the result of the work of Subgroup #1 and of other parts of Subgroup #3 is that environmental problems contribute

significantly to the emergence of serious conflict in the international context, this might allow to draw specific conclusions as regards proposals for more fundamental reforms of the system of international institutions. This will include the possibility of establishing new international institutions and reforming more basically the system of international organizations. It has, for example, been proposed to establish a „Global Environment Organization“ (GEO) or a „World Council on the Environment“ that could possibly be made up of UNEP and UNDP. Another proposal consists of the establishment of an ecological chamber at the International Court of Justice.

It might be investigated how any urgency injected in the discussion on the reform and restructuring of international environmental institutions by demonstrating the relevance of environmental matters for the emergence of serious conflict does influence the evaluation of the above mentioned proposals. The basic question is whether and, if yes, which basic reforms of the international system of institutions seem warranted in the light of the relation between environment and security. In particular, this requires an evaluation of the special contribution new international institutions could make to preventing and resolving environmentally induced conflicts that could not be made by other means like existing international environmental institutions. Whether such a special contribution is needed will again depend on the result of the threat assessment to be carried out by Subgroup #3.

3. Foreign and Security Policy

Security and foreign policy become the predominant policy areas once environmental stress has resulted in more direct threats to security. They are concerned with avoiding conflicts and securing good international relations. While they are thus also of importance before environmental

stress has lead to serious conflict, foreign and security policy become the primary policy areas relevant to countering environmental security threats, once social, political and economic problems that are partially caused by environmental problems have led to serious tensions or even conflict (domestic or international).

As regards the relationship between environmental and development policy options on the one hand and foreign and security policy options on the other, it is evident that environmental policy addresses the root of the problem of environmentally induced conflicts, while security policy becomes especially relevant when environmental policy was unsuccessful. Foreign and security policy may thus be necessary to counter environmentally induced conflicts so as to provide room for the peaceful effects of effective environmental policy.

From the perspective of foreign and security policy, the environment is but one among several important factors that might contribute to the emergence of serious conflict. It is thus to be assumed that a discussion of foreign and security policy options in the framework of environment and security might not point to totally new options for securing peace in general. Rather, the discussion will aim at taking the environment in account properly in assessing existing global and regional security risks.

3.1 Global Cooperation

The principal organ for discussing and assessing risks to international security at the global level is the UN, especially its Security Council supported by the Secretary General of the United Nations. It might be discussed whether the mandate of the Security Council could be broadened so as to address environmental risks to

international security early in the process of conflict evolution.

It might be especially appropriate to discuss the establishment of an early warning system at the global level that could be run, for example, by UNEP. Also, establishing a more elaborate decision support system under, say, the auspices of the Security Council may be considered. Based on the risk assessment carried out previously, the analysis should evaluate these and any other proposals.

3.2 Regional and Bilateral Cooperation

As in the field of environmental and development policies, many regional institutions exist in the policy areas of foreign relations and security. Most prominently in this respect is NATO itself. It appears obvious that the Pilot Study will investigate in detail the options that exist for NATO to prevent and to respond to environmentally induced conflicts. As in the case of global cooperation, options like establishing an early warning system as well as a decision support system need to be considered.

Given the limited geographical scope of NATO competence and the growing international interdependence also with respect to international security issues, it might be useful to evaluate whether and to which extent other regional institutions with competence in the field of security policy need to be involved in responding to environmentally induced conflict. This analysis will identify candidates for this involvement, elaborate their possible role and seek to clarify options for cooperation between them as well as, especially, with NATO.

3.3 Reforming International Security Cooperation

In this section, possibilities for reforming the whole international security cooperation are to be discussed. It might be asked whether the Security Council as well as the relationship between the Council and other international institutions relevant to security policy needs to be reformed or restructured in the light of environment and security in an international context.

We would appreciate if EBR and FAFORSE could elaborate on the following and additional aspects:

UN Secretary General Butros Ghali outlined four key goals in the Agenda for Peace:

- Identification of conflict-bearing situations as early as possible.
- Peace making before a conflict becomes violent

Mediation and the offer of good services as well as negotiations and other forms of peaceful conflict settlement should be used more frequently.

- Peace keeping for the preservation of peace

Upon the consent of the conflicting parties a multilateral troop could ensure separation of the parties, the surveillance of truce, establishment of communication between the parties or protection of settlements.

Additional measures are necessary such as establishing standing UN police troops or the right to deploy blue helmets without consent of the parties in limited cases, such as genocide

- Peace building applies in various contexts

Reconstruction of institutions and of the infrastructure, aid to mitigate the consequences of refugee migration, fostering of regional economic and political cooperation, strong restriction of arms exports are only a few of many possibilities.

APPENDIX L

Referat G II 5 Bonn, 20. November 1996

RefL.: MR Lietzmann

Ref.: VA Huchthausen

Draft Minutes of the Meeting for the Pilot Study „Environment and Security in an International Context“

- Ankara, November 11 and 12, 1996 -

Annex I. List of Participants of the Pilot Study Meeting Ankara, November 11 and 12, 1996

II. Agenda of the Pilot Study Meeting

III. Work Subjects

IV. Working Program of the Pilot Study

I. Introduction

The second meeting of the Pilot Study „Environment and Security in an International Context“ took place in Ankara, Turkey in the headquarters building of the Scientific and Technical Research Council of Turkey (TÜBITAK) from November 11 to 12, 1996. Representatives from Canada, the Czech Republic, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Macedonia, Norway, Poland, Rumania, Russian Federation, Sweden, Turkey, the United States of America, and the Regional Environment Center in Budapest participated in the meeting. A list of participants is attached in Annex I. The meeting was co-chaired by Mr. Kurt M. Lietzmann (Federal Ministry of Environment, Nature Conservation and Nuclear Safety of the Federal

Republic of Germany) and Mr. Gary D. Vest (United States Department of Defense).

The participants of the meeting were welcomed by the Vice President of TÜBITAK, Prof. Dr. Namik Kemal Pak, whose speech provided a brief overview of government policy in the areas of science and technology in Turkey, in which TÜBITAK plays a major role. Also on behalf of TÜBITAK, Turkey's National NATO/CCMS Coordinator, Prof. Dr. Nejat Ince, addressed the meeting with opening remarks stressing the importance of the pilot study within the three strategic pillars of NATO (military, political, and social and science dimensions) and providing a brief history of environment and security in the context of NATO/CCMS. He put special emphasis on the need for coordinating the Pilot Study with related work underway within the framework of the NATO Science Committee, in order to ensure optimal synergistic effects.

Following the welcoming remarks, the agenda as introduced by Mr. Lietzmann was adopted. The agenda is attached as Annex II to this report.

II. Introductory Remarks by Pilot Study Directors

In their introductory remarks, the Pilot Study directors recounted the current status of the discussion on environment and security and the way leading from the NATO/CCMS plenary meeting on March 11-12, 1996 in Brussels to the Pilot Study meeting on April 17-18, 1996 in Waldbröl and the current Pilot Study meeting in Ankara. They stressed the focus of the Pilot Study on preventive measures to counter violent conflicts based on the considerable contribution of environmental degradation and conflicts over natural resources. Mr. Vest pointed to the importance of the issue of environment and security within current US politics, stressing in particular the upcoming speeches on this topic by Secretary of Defense Mr. Perry

and EPA officials. The speeches demonstrate the major political commitment to deal with environmental causes of conflict within the framework of the newly introduced term „preventive defense".

III. Presentation of the ECHS Server

Following the introductory remarks by the Co-Chairs, Mr. Brian Smith of the US-based Evidence Based Research (EBR Inc.; USA) introduced the Environmental Clearing House System (ECHS) Server to the participants of the meeting. He demonstrated the opportunities that the emerging ECHS Server provides to the Pilot Study participants by making all relevant information on the Pilot Study as well as a comprehensive bibliography accessible to them. The relevant World Wide Web Internet site address is http://echs.ida.org/.

IV. Presentation of the Pilot Study Interim Report and Statements by the Participants

In preparation for the Pilot Study meeting in Ankara, a Pilot Study Interim Report entitled „Environment and Security in an International Context: State of the Art and Perspectives" had been submitted and circulated among the participants by the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety and Ecologic, the Center for International and European Environmental Research. Mr. Alexander Carius and Mr. Sebastian Oberthür of Ecologic presented an overview of this Pilot Study Interim Report to the meeting including two clusters of possible research subjects, identified as a result of the Interim Report, which were to build the foundation for discussion on the future direction of the Pilot Study.

The Pilot Study Interim Report was welcomed by the participants as a sound basis for discussion and a helpful

tool for structuring this discussion. Commenting on the Interim Report, several representatives suggested expanding the analytical focus provided in the Report slightly by differentiating between inter-state and domestic conflicts and by paying more attention also to non-violent conflicts.

V. Other Presentations

The first presentation in the afternoon session of November 11, 1996, was given by Prof. Nils Petter Gleditsch of the International Peace Research Institute Oslo (PRIO), who reported on the NATO Advanced Science Workshop on Conflicts and the Environment held in Oslo in June 1996. He described in some detail the analytical and methodological problems involved in the study of environmental causes of conflict and of conflict analysis in general. He placed special emphasis on the conceptual problem of identifying single causes of complex conflicts and provided some statistical data on the frequency of domestic and inter-state conflict during the past more than 100 years.

Mr. Bertram Spector of the Center of Negotiation Analysis spoke of conceptual aspects of the analysis of environment and security. He distinguished four models (scarcity model, spillover model, modernization model and the leading edge model) frequently used in dealing with the issue of environment and security and analyzed the respective advantages of the different approaches. He drew attention to the opportunities that might be provided by combining some of the models.

Mr. Sebastian Oberthür of Ecologic then presented an overview on the state of the scientific discussion on environment and security in Germany. He distinguished four aspects of the discussion: conceptual aspects, methodological and modeling issues, major problems and

problem areas dealt with in the scientific discussion, and possible response strategies. In the presentation, an overview of the substantive discussion as well as of relevant institutes and available research capacities was given.

The work of the first day was concluded by two presentations provided by the hosting country, Turkey. First, Prof. Dr. Cemal Saydam of the Middle East Technical University (METU) reported on his research results dealing with the impacts of Saharan dust clouds stemming from Egypt on Turkey. By precipitating into sea water near Turkey either in the Mediterranean or the Black Sea, the Saharan dust results in algae blooms which, in turn, release sulfur into the atmosphere supporting the build-up of clouds. Afterwards, Prof. Dr. Ali Ihsan Bagis of Hacettepe University gave an overview of the situation in Turkey regarding environmental security concerns. He pointed to the central role of political stability within Turkey for stability in the Middle East, Europe and Russia. He emphasized that the problem of water scarcity in the region is enhanced by the increase of population in neighboring countries.

VI.Proposal on the Structure of the Future Work of the Pilot Study

Based on the proposed work subjects included in the Pilot Study Interim Report, Major Quante of the German Federal Armed Forces Office for Studies and Exercises (FAFORSE) proposed a working structure for the Pilot Study divided into three areas (see Annex III). According to this proposal, Area 1 would deal with the aspects of definition and modeling included in the conclusions and recommendations of the Pilot Study Interim Report. Area 2 would cover the issues of defining indicators and thresholds and developing a database as well as a decision support system. In Area 3, risk analysis and recommendations for environmental and security policy would be elaborated. It

was foreseen that work on Area 1 was to be started before the work of the other two areas, since interim results of the methodological and modeling exercise were judged to be a precondition for the start of the work on many aspects of the other two Areas.

Elaborating further on how to integrate the Areas into the Pilot Study process by the end of 1998, Mr. Carius presented an organizational structure with coordination instruments and a time schedule for the coordination of the three Areas. It was agreed that this subject should be discussed by the two Pilot Study directors and settled during the next Pilot Study meeting.

Mr. Vest recommended approaching the nexus between environment and security aspects from two directions. Analyzing existing interstate and domestic conflicts where environmental aspects contributed to the occurrence of conflicts and analyzing environmental problems and resource scarcities that may potentially lead to conflicts. These approaches would therefore lead to three different categories of outcomes: conflicts, grievances and threats. The Pilot Study endorsed this approach as a guidance for future efforts.

The working structure proposed by Major Quante of FAFORSE was generally considered by the participants to be sound and helpful. It was agreed to structure the future work of the Pilot Study accordingly. Following the expression of some concern that dealing only with violent conflict as mentioned in the proposal might restrict the work of the Pilot Study too much, it was agreed that the term „violent conflict“ - especially with regards to its usage in the work program of Area 1 - should be read as „serious conflicts“.

In light of this agreement, Germany and the USA offered to co-chair the work of Area 1 (‘*Definition and Modeling*’), to

begin as soon as possible. The USA offered to co-chair the work of Area 2 ('*Definition and Development of a Database and a Decision Support System*'). Germany offered to co-chair the work of Area 3 ('*Risk Analysis and Recommendations for Environmental Politics and Security Politics*'). These offers were generally welcomed and accepted by the participants. Since the issue of possible co-chairs of Areas 2 and 3 could not be resolved immediately, it was agreed that this subject should be settled at the next Pilot Study meeting following consultations of the existing co-chairs with possible volunteers in the interim.

Having temporarily resolved the issue of establishing the sub-groups responsible for the three Areas of the Pilot Study, several representatives expressed interest in contributing to specific aspects of the work of the Pilot Study. Rumania, pointing to fruitful experiences made with early warning systems used to coordinate efforts of the riparian states of the river Danube, announced its intention to contribute to the development of early warning indicators (Area 2.2). Sweden declared its willingness to contribute to the comparative threat assessment (Area 3.1). The representative of the Regional Environmental Center in Budapest expressed its general interest in Area 3 and in hosting a workshop in 1997, and combine it with a regional expert meeting.

The Polish delegation expressed its interest in contributing to Area 1 (1.2 to 1.5) dependent upon the availability of sufficient funding. Poland also invited the Pilot Study for one of the upcoming meetings. This invitation was gratefully accepted by the meeting, and it was proposed that a Pilot Study meeting take place in the last quarter of 1997 in Warsaw. Other participants appeared to be willing to contribute to specific aspects of the Pilot Study, but

needed to consult other government agencies before making firm commitments.

It was stressed by the participants that special attention should be given to secure a high degree of coordination between the working groups through meetings of the co-chairs. Integration within the working groups should be enhanced by introducing one or two workshops for each area apart from official Pilot Study meetings.

VII. Organization and Steps for Future Work

Representatives of institutions in several countries expressed their interest to contribute to the Pilot Study but could not attend the meeting in Ankara. These participants will receive full documentation of the meeting, and an update will be given at the occasion of the first meeting of working group 1.

Evidenced Based Research, USA will draft a questionnaire to be sent to the participants as well as those representatives of NATO Member States and Partnership for Peace Countries interested in the Pilot Study but not present in Ankara covering the following subjects:

- Provide information on those cases of serious conflicts, that are analyzed by research institutions or are of special interest in the respective countries,
- Participation in sub-groups and possible contribution to one or more of the themes agreed upon,
- Choosing areas of interest and setting up research projects or providing summarized information on existing projects in light of the context of the Pilot Study.

The possibility of setting up a list server for all participants in order to enhance the communication between the participants was also discussed. It was agreed that Evidenced Based Research take responsibility for further investigations for necessary technical solutions.

VIII. Next Meeting

The next Pilot Study Meeting is scheduled for May 20 to 22, 1997 at the Center for Strategic Leadership (United States Army War College) in Carlisle Barracks, Pennsylvania. The first Working group session of Area 1 is to be held in Washington DC on January 20 and 21, 1997. An outline for the analysis of indicators of environment and security issues as well as conceptual issues regarding the modeling are to be discussed.

APPENDIX M

Subgroup #3, Threat Assessment and Policy Responses

Assessment of environmental security threats

- Comparative threat assessment of major global and regional environmental problems
- Integrated regional threat assessment

Policy responses for preventing environmentally induced serious conflicts

- Environmental and development policy
- Foreign and security policy

Slide 1

Assessment of Environmental Security Threats

- Comparative assessment of major regional and global environmental problems and their security relevance?

To what extent will NATO and other regions relevant to NATO be threatened by environmentally induced security risks?

- Step 1: selection of problems, estimating security relevance
- Step 2: conducting case studies to verify results of step 1

Integrated regional threat assessment

- Assessing the degree of threat to the NATO region
- Identifying regions of interest to NATO most prone to be the place of environmentally induced conflicts.

Slide 2

Policy responses for preventing environmentally induced serious conflict

- Different levels of policy activity (global, regional, bilateral)
- Different stages of policy interventions (before and after conflict exists)
- Policy approaches at national, regional and international level are appropriate

Development policy

- Sound environmental management is closely related to social, economic and political matters
- Development policy has to stabilize social, economic and political conditions

Slide 3

International Environmental Policy

...Focusing on

- International environmental law and regimes (global and regional environmental agreements)
- Non-governmental options
- International and regional organizations including NATO as well as UN, EU, MERCOSUR, ASEAN, etc.

New international institutions

Slide 4