ENVIRONMENTAL SECURITY:
A DOD PARTNERSHIP FOR PEACE

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Editor

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FOREWORD

International environmental issues can lead to instability and conflict that threaten U.S. security interests and may result in the commitment of U.S. forces. Chronic, unresolved environmental issues threaten stability in such critical regions as the former Soviet Union, Africa, Latin America, and the Middle East. Recognizing this, the Department of Defense (DOD) has committed itself to using DOD assets to mitigate environmental issues that could lead to instability. However, a strategy to implement this proactive policy has not been developed.

As part of the effort to create this strategy, the Deputy Assistant Secretary of the Army (Environment, Safety and Occupation Health), Mr. Lewis D. Walker, convened a panel on Environmental Security as part of the Fifth Senior Environmental Leadership Conference. The panel was sponsored by the Strategic Studies Institute and the Army Environmental Policy Institute. Its members were environmental security experts from within and outside DOD and represented Major Commands and the Joint Community. This report was drafted by members of the panel and edited by the panel chairman.

While recognizing that their report was a contribution to the ongoing effort to define DOD's environmental security role and not a comprehensive study, the panel reached consensus, and made recommendations on key policy issues. The Strategic Studies Institute is pleased to offer this report as a contribution to the debate on DOD's environmental security role.<R>

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SUMMARY

The end of the cold war has brought with it a milieu in which superpower control of client states has been greatly reduced and regional conflict has been exacerbated. Many formerly suppressed variables that contribute to political instability and regional conflict are now seen as important targets of foreign policy. One of the most important of these is the role of environmental issues in undermining the stability of newly formed democratic regimes. As stated by the National Security Strategy, "The stress from environmental challenges is already contributing to political conflict." Recognizing the importance of environmental issues to U.S. national security interests, the Deputy Undersecretary of Defense for Environmental Security defined DOD's role in environmental security to include "mitigating the impacts of adverse environmental actions leading to international instability."

The Secretary of Defense in his analysis of the future threat environment described the four primary threats to U.S. national security interests as regional dangers, nuclear dangers, dangers to democracy, and economic dangers. All of these threats have significant environmental components and all could involve U.S. combat forces in regional conflict. By participating on a preventative basis in the resolution of transnational environmental issues that could lead to such conflict, DOD can forestall future Somalia-like involvements before they occur, a course of action that is extremely cost effective.

DOD has the broad spectrum of capabilities that allows it to take pro-active measures that could prevent conflict and obviate the need for costly involvement of U.S. forces overseas. By so doing, DOD would be supporting the National Security Strategy objectives of encouraging new democracies, enhancing the humanitarian agenda and promoting global engagement and the peaceful settlement of regional conflict.

The environment will continue to have a significant role in international stability and should, therefore, be seriously addressed by U.S. national security policy. As a key executor of this policy, DOD has capabilities that should be used in resolving the environmental challenges that the United States must face. Through effective leadership, partnership, and resources, U.S. federal agencies can serve as an environmental security magnet effectively bringing together the international community to mitigate issues that could lead to instability and conflict, promote sustainable economic development and preserve our planet.

Recommendations.

• Make a renamed DOD/State Department Security Assistance Program the flagship of environmental security efforts. Used for

environmental outreach aimed at creating the capabilities among host nations to address their own environmental security needs, such a program would take advantage of the existing infrastructure and State/DOD working arrangements while fighting the dangers of isolationism and instability.

• Appoint a special assistant to the National Security Advisor for International Environmental Security Affairs and create an interagency working group, chaired by the Special Assistant, to develop a Presidential Decision Document establishing U.S. environmental security policy.

• Establish environmental security as a principal objective of the National Security Strategy and include environmental issues in National Security Council threat assessments and foreign policy planning.

• Emphasize the linkage between environmental security objectives and the achievement of current, primary congressional and administration interests of democratic reform, economic development, and conflict resolution.

• In conjunction with the United Nations, use DOD capabilities to enforce international treaties and agreements.

• Create a DOD Environmental Crisis Monitoring Center to warn the policymaking community of chronic environmental issues before political positions have hardened and policy options have narrowed.

• Use environmental security issues to promote the transfer of appropriate environmental technology and expand the global market for U.S. corporations.

• Use environmental security missions to enhance the operational capabilities of U.S. military forces.

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> It should be stressed that the broad range of capabilities within the military permits the national leadership to use the military--in which it has invested so much--for more than the traditional combat role. It can do this without dulling the sword.
>
> Admiral Paul David Miller, USN, 1993[1]

INTRODUCTION

The change in the international arena since the end of the cold war has given rise to an entirely new approach to viewing U.S. security interests, and a recognition of the importance of environmental factors in international stability and the onset of conflict. During the cold war, parenting by both the United States and the Soviet Union limited regional conflicts or ensured that sufficient superpower attention was paid to preclude their escalating into nuclear war. In the absence of superpower control, long festering regional, ethnic and religious enmities have erupted into conflict that defies international management and threatens U.S. security interests. With Somalia as the precedent, the use of U.S. forces to address the humanitarian dimensions of this conflict has been established and public, media, and nongovernmental organization (NGO) pressure exists to commit additional U.S. forces to humanitarian and peacemaking missions. Because the U.S. Government's ability to manage multiple conflicts and fight multiple wars is limited, there is an increasing need for the United States to become proactive in addressing the causes of such conflicts before they occur, significant among them environmental issues. As an element of government with significant interest in solving regional problems before they escalate into conflict, the Department of Defense (DOD) should play a major role in problem resolution and conflict prevention. This report examines adverse environmental actions as potential causes of conflict, assesses DOD capabilities to mitigate these actions, and recommends policies for the DOD to proactively address environmental issues.

The DOD environmental security mission has its roots in the fact that environmental problems that lead to instability and contention are being ignored, and U.S. combat forces are becoming involved in the resulting conflict. In addition, DOD's environmental security mission supports the National Security Strategy (NSS) of the United States and must be understood in that context.

The NSS is the document written by the National Security Council to reflect U.S. national interests and objectives and the strategic concepts for achieving them. These interests guide U.S. foreign policy, and their objectives are achieved using the

traditional elements of power: political, military, economic, and social. The environment became an element of the National Security Strategy and a recognized objective that supports U.S. interests in 1991, when the NSS pointed out, "the stress from environmental challenges is already contributing to political conflict," and listed as a primary U.S. objective to "achieve cooperative international solutions to key environmental challenges."2 DOD has a larger role beyond the physical defense of the nation. As an element of power with unique technical attributes, DOD is an appropriate and well-qualified entity with which to achieve environmental objectives of the National Security Strategy. The question needs to be asked, "if not DOD, what agency has the resources and experience to execute the U.S. environmental security mission?"

In the 20th century, international environmental problems have contributed significantly to international instability and conflict, and therefore have the potential to involve U.S. combat forces. As the current environmentally related crises in Haiti and Somalia make clear, DOD has a vested interest in mitigating environmental problems before they evolve into difficult-to-manage state or regional conflicts. Regional wars that threaten U.S. interests potentially can involve U.S. forces, and incur substantial operational and public support costs to the United States and to DOD. *By participating on a preventive basis in the resolutions of environmental issues that could lead to such conflict, DOD can forestall future Somalia-like involvements before they occur--an action that is extremely cost effective.* Recognizing this phenomenon, the Deputy Undersecretary of Defense for Environmental Security has defined DOD's role in environmental security to include, "mitigating the impacts of adverse environmental actions leading to international instability."[3] This role reflects the Secretary of Defense's recognition that the four primary threats to U.S. national security interests are: regional dangers, nuclear dangers, dangers to democracy, and economic dangers.[4] *All of these threats have significant environmental components and all could involve U.S. combat forces in regional conflict.* Such involvement carries high costs to DOD in terms of lives, dollars, and, as the media graphically portrays the resulting casualties, the potential loss of public support for the military and other DOD missions.

DOD can address environmental security objectives across a broad spectrum of operations, taking preemptive measures that could alleviate the need for the direct involvement of U.S. combat forces. Such measures draw upon DOD's variety of technical skills and noncombatant capabilities, and may be executed in partnership with other U.S. agencies and international organizations. Moreover, they would directly support the NSS objectives of supporting new democracies and the humanitarian agenda, preventing conflict, and promoting global engagement.[5]

This report addresses how DOD can best utilize its resources

to mitigate adverse environmental conditions that could lead to international instability or conflict and, therefore, pose a threat to U.S. national security.

THE CONCEPT OF ENVIRONMENTAL SECURITY

The environment is not a new security concept, but in the past it has primarily been seen as a victim rather than a cause of conflict.[6] Today, its role as a primary variable in regional stability is unquestioned.

> Environmental degradation imperils nations' most fundamental aspect of security by undermining the natural support systems on which all of human activity depends.
>
> Michael Renner, 1989[7]

Security requires a fundamental level of economic, environmental, and physical well-being; a healthy economy and a healthy environment go hand-in-hand. Society must find solutions that protect the environment and its natural resources while allowing for the development required to sustain living standards in a growing world population.

The legitimacy of a state regime depends upon its ability to manage the country's resource base in a manner that satisfies the basic needs of its population. Environmental degradation has the potential to erode that resource base and make it impossible for the government to satisfy these needs and to maintain the confidence of its people. If sustainable development is precluded by environmental problems, it may lead to environmental refugees, internal conflict over scarce resources and, ultimately, to a loss of legitimacy and downfall of the regime. This phenomenon is particularly important to U.S. interests in the post-Soviet era, where promoting democracy and free market economies in vulnerable, developing states is a primary objective of the United States and its allies.

Environmental security requires a broad approach because environmental systems are interconnected, having effects that cross the boundaries of time and space. For this reason, difficulties stemming from local environmental neglect can escalate into regional or global conflict. Long-term sustainability implies the ability to meet basic human needs over time and states must take both transboundary effects and the needs of future generations into account. Because of the intergenerational nature of environmental issues, environmental policy requires long-term planning and activity. With the acceleration of natural system degradation over time, many environmental issues become more difficult to correct the longer they persist. A combination of factors: society depleting or polluting resources at accelerating rates, the inability of nature to regenerate/recover at commensurate rates, society's

increasing tolerance for change, and apathy over resource depletion make it difficult for developing states to assess and understand environmental processes and develop technical expertise in time to take corrective action.[8]

Instability and conflict often result from the poverty created by the economic regression of resource depletion or scarcity. The abuse of power by the leaders of many developing countries has frequently manifested itself in exploitive resource management practices, a wasting away of the economic infrastructure, human suffering and ethnic-based competition for increasingly scarce resources, and, ultimately, to conflict. Given this phenomenon, why have security analysts been slow to focus on environmental destruction as a source of conflict?

First is the long lead time of most environmental threats. In prioritizing threats to a nation's security, it is natural to focus governmental resources on objectives that guarantee security in the short term. The perception of threats such as nuclear holocaust or conventional warfare is very visceral and the system for prioritizing political and economic objectives is based on annual evaluations, elections and other short-term considerations. However, the absence of an overarching Soviet threat and a growing public awareness of impending environmental shortages and irreversible losses have provided the conditions necessary to allow the security community to consider less obtrusive factors of global instability.[9]

The global population has grown geometrically and will double over the period from 1950 to 2000, bringing environmental issues to the fore. Rates of global population continue to increase, particularly in the vulnerable developing world, accelerating demand for food and a broad range of other natural resources. The global rates of consumption of natural resources are far greater than the ecosystem has previously endured.[10] The world is rapidly moving beyond local shortages, which historically have created local conflict, to regional or transboundary resource shortages with the potential to escalate into far reaching hostilities involving U.S. forces. In numerous regions the ability of the earth to replenish its renewable resources, even with the human intervention of irrigation and fertilizer, has already been exceeded. Indeed, these very interventions often create unforeseen, adverse environmental consequences. Thus, the frequently ignored, long-lead-time environmental factors have reached their thresholds and are causing instability that security policy analysts cannot ignore.

Second, technological advances have allowed society to use natural resources more creatively and efficiently, thus accelerating their consumption. Technology transfer enhances the ability of other nations to exploit and deplete resources on a broader scope. The significant difference is the scale and speed with which society now consumes resources for peaceful purposes, or destroys them through belligerence or accident. The

combination of population increases and technological advances has allowed many countries to exploit their resource base at rates that outstrip the carrying capacity of the environment. With such accelerated and unmanaged resource use, the difference between renewable and nonrenewable resources becomes irrelevant, as the ability of the ecosystem to regenerate itself is destroyed. Overgrazing, overfishing, toxic and hazardous pollutants, and soil loss can permanently deplete "renewable" resources.[11]

Third, scientific knowledge is far greater than in the past, yielding a heightened awareness of the interconnectedness of ecosystems and of human reliance on the maintenance of ecosystem balance. The resulting understanding has increased the urgency of solving environmental problems.[12] Further, advanced methods of data collection provide growing evidence that current practices are undermining critical ecological balances at the national, regional and global levels. These changes have made security policy analysts aware of the urgency of resolving environmental security issues before they can lead to conflict. Accomplishing this task, however, will require a strategy.

The time frame associated with recognizing environmental threats, creating a strategy with which to address them, and planning and executing the threat-mitigating strategy is longer than those encountered with the traditional security threats of weapons proliferation and regional conflict. To meet these threats one must recognize the wisdom of preventing conflict by providing resources to address the sources of instability. Conflict resolution is much more expensive in terms of lives, money and environmental destruction than conflict prevention. As Secretary of Defense Robert S. McNamara noted, simply purchasing more military hardware does not buy a country greater security. A country must develop a strategy that employs all elements of national power and a variety of resources to mitigate threats before they lead to conflict, whether the threats are political, economic, environmental, or military.[13] Preventive strategies are more effective when they emanate from a position of strength and, where possible, have a synergistic relationship with strategic concepts to achieve other national objectives. By emphasizing and applying U.S. knowledge, institutions and technologies, environmental degradation can be limited and environmentally sustainable development can be fostered. This is the only long-term strategy that will allow the nations of the earth to improve the living conditions of impoverished peoples and reduce the likelihood of conflict.[14] And, in the end, a strategy of conflict prevention saves vast financial resources and perhaps thousands of lives for the ultimate environmental security stakeholder...the Department of Defense.

ENVIRONMENTAL THREATS TO NATIONAL SECURITY

Because much of the popular periodical literature concerning environmental security has dwelled on the past environmental

transgressions of DOD and their domestic health risk potential, to the exclusion of the much more significant international dimension, it is important to clarify the threat that environmental security issues pose to U.S. national interests. Therefore, this section explains what constitutes an environmental threat, lists various threats at the three geographic levels, and provides clear examples of how environmental issues are threatening U.S. interests in the former Soviet Union, Middle East, and Caribbean.

All environmental problems are not threats to national security. Determining which constitute legitimate national security issues and prioritizing them is a difficult challenge. No generally accepted criteria for making such a determination exist, and the arguments defending the validity of environmental security as a national security issue often criticize the lack of a methodology by which decisionmakers can determine when risks exist and when resources should be committed, a criticism relevant to many issues of national security.[15]

Prioritization for environmental risk analysis is based on the assumption that environmental problems create or contribute to events that threaten U.S. national security interests by:

• Undermining the legitimacy of governments or promoting instability;

• Creating civil strife or conflict that could involve U.S. forces;

• Harming U.S. strategic alliances and the ongoing democratization process.

Environmental actions may receive priority when they provide an opportunity to foster engagement in humanitarian issues, or promote U.S. strategic interests.

These threats may occur at three general geographical levels of resolution, although they are not mutually exclusive. The most notable environmental threats to U.S. security are:

• **Global**: competition for or threatened denial of strategic resources; ozone depletion; global warming; loss of biodiversity; proliferation of weapons of mass destruction; effects of demilitarization of nuclear, chemical, biological and conventional weapons; space debris; and inability or unwillingness of countries to comply with international environmental agreements and standards.

• **Regional**: environmental terrorism, accident or disaster; vector-borne communicable diseases; regional conflicts caused by scarcity/denial of resources; cross border and global common contamination; and environmental factors affecting military

access to land, air, and water.

• **State**: environmental degradation of the resource base on which governmental legitimacy depends; risks to public health and the environment from DOD activities; increasing restrictions on military operations and access to air, land, and water; inefficient use of military resources; reduced weapons systems performance; demilitarization of nuclear, chemical, and conventional weapons systems; and erosion of public trust.[16]

Each of these categories may have global, regional or national dimensions.

East Europe and the Former Soviet Union.

It is in the U.S. national interest that stable societies and governments emerge in Eastern Europe and the former Soviet Union (FSU). Unfortunately, both regions are politically and economically unstable and threatened by environmental problems. To survive as stable entities, these governments must address the basic needs of their people, which requires that their societies are capable of producing (or acquiring) and distributing food, vital materials and services. The FSU's GDP growth in 1992 was estimated at -18.5 percent,[17] while consumer prices escalated at least 70 percent during 1990-91 in FSU nations; some saw consumer prices rise by approximately 125 percent.[18] The nations of the FSU and East Europe cannot establish viable economic and political systems without solving some of their fundamental environmental problems.

The Soviet regime released untreated industrial and hazardous wastes into the environment at military and civilian facilities in both the FSU and Eastern Europe, and pursued policies leading to irreversible contamination of natural resources. East Europe has some of the dirtiest coal-fired power plants in the world; pollutants pose health risks and threaten buildings. One well-publicized example is the Lake Baikal region, where agricultural irrigation practices led to catastrophic damage and the destruction of agricultural lands. Mismanagement of nuclear production, testing, and wastes irradiated many sites. The facility at Mayak, which produces plutonium for military purposes and for handling and burying radioactive wastes, remains one of the most problematic operations, due to several serious accidental nuclear releases. Significant quantities of radioactive waste were dumped into the Techa River; large areas of land and approximately a half-million people were irradiated.[19] Moscow itself is dangerously polluted; approximately 350 sources of radioactive contamination were discovered in the city between 1982-1987. Since then, over 300 *new* sources of radioactive contamination have been found.[20] The weapons testing sites at Semipalatinsk and Novaya Zemlya are environmental disaster areas.[21] Millions of curies of radioactive waste were discharged into Lake Karachai, thought to

be the most contaminated site on earth by the late 1960s. The contamination in waters offshore is estimated at about 1.5 million curies.[22] Also, nuclear accidents continue to occur, such as the April 1993 nuclear waste explosion at Tomsk-7, a military facility.

Nationally or regionally-based environmental problems in these lands have direct and serious implications for economic and political stability. If not adequately addressed, transboundary environmental problems could trigger significant economic, social and political disruptions within a nation or region. As more is learned about the movement of pollutants and delicate ecological balances, it is increasingly clear that each nation is vulnerable to the environmental actions of other states.

Instabilities leading to armed conflict are only one aspect of the environmental equation. Aside from interest in the stability of regimes in Eastern Europe and the FSU, the United States has a particular interest in the management of weapons of mass destruction in the former Soviet empire. Without stable governments, the likelihood of mismanagement, of terrorism, or of black-market sales of both nuclear and conventional weapons increases dramatically. There are stockpiles of extremely hazardous chemical and nuclear materials in the FSU. It is not clear how these materials are being safeguarded. For example, there may be as much as 150,000 tons of heptyl--a supertoxic, a carcinogenic liquid rocket fuel used for Russian missiles--stockpiled in closed production facilities and missiles. No technology is known for handling it.[23]

The United States has clear and immediate interests in negotiating and carrying out arms reduction and safe disposal of weapons. These issues entail daunting technical challenges in addition to the political challenge of reaching agreement. No single FSU nation has the authority to determine the fate of these weapons. Even with effective agreements and planning, the danger from these weapons and the need for continuous control and oversight by governments will continue; some of these weapon components cannot be degraded into "safe" materials in the foreseeable future. The complex set of tasks involved in nuclear weapons destruction would be impossible if the FSU lacks authoritative government actors to negotiate and execute demilitarization and cannot be safely accomplished without Western technical assistance.

In addition to concern about the direct impacts upon stability arising from environmental conditions in the FSU and Eastern Europe, the United States must be concerned about indirect transboundary effects on the rest of Europe. Some of those effects are obvious. Ecosystems are connected, and pollution does not respect national or regional boundaries; polluting industries contaminate rivers that run through many countries, killing fish, clogging waterways, endangering local populations, and eventually depositing poisons into international

waters. Groundwater contamination spreads across national borders; air pollution blows across borders. Moreover, the political and economic consequences of environmental crises spill over national and regional borders as well. For example, soil is depleted by pollution and by lack of clean water; as soil is degraded, agricultural productivity declines and migrations occur as people seek more productive farm lands. Large migrations from the East would create very significant economic and security problems for the receiving lands, and would threaten their stability. Environmental systems and processes do not remain static. If effective steps are not taken to address these problems, deterioration will spread.

There are economic motives for pursuing environmental security. As the peoples of the FSU and Eastern Europe seek to rebuild infrastructure and open new relationships, existing and potential economic ties are important. The region is potentially very important for new markets, which the United States wants to encourage for economic as well as political reasons. If these nations fail to meet environmental challenges or to set and meet environmental goals, they will maintain severely polluting industries---and attract *more* polluting industries. Failure to meet Western environmental standards will limit trading opportunities and increase local, regional and global threats to the environment.

Given the strong interest in the stability of this region, there are reasons for alarm. The catalogue of severe environmental problems in the FSU keeps growing, as more is learned about the conditions, and health effects data are released. There is massive contamination of both air and water sheds; large areas of land and surface waters have been polluted with hazardous and radioactive materials. One-sixth of the world's land mass is moving toward disaster. One of three inhabitants of this territory lives in an ecological crisis zone, covering an area of over 4 million square kilometers,[24] resulting in severe health effects. The former German Democratic Republic, for example, had the largest uranium mine operations in Europe, which supported the USSR nuclear weapons industry. Three mines have over 150 million tons of uranium mill tailings, plus many tons of contaminated liquids. One site, now closed, generated thousands of cases of lung cancer, with more reported each year.[25] Neither Eastern Europe nor the FSU has the strong efficient governmental infrastructure or economic resources necessary to successfully assess, or more importantly, mitigate these environmental threats.

Contaminated lands and livestock can destroy a state's ability to produce foodstuffs for many years, perhaps permanently. Diminished crop and fish production, and consequent food shortfalls, are consequences of severe ecological degradation. High disease and infant mortality rates and an actual decline in life expectancy are present in the nations of this region.[26] Environmentally-induced health problems include

neuro-toxic effects that impair brain function. Decrements in the mental as well as physical capabilities of many people would affect the region's ability to build and maintain reliable armies and manage sophisticated socio-economic systems. The success of economic restructuring and political stability are interconnected. No nation can maintain complex political, social or economic infrastructures without a healthy citizenry.[27]

For these reasons, the West, and particularly the United States, must play a role in revitalizing the environmental processes and resources in Eastern Europe and the FSU if there is to be any stability possible in these areas. The problems are massive and unaffordable; they require long-term, often technical solutions.[28] Additional sites and problems continue to appear in these areas, driving cost estimates even higher.

The West should prioritize problems that seem particularly important to stability, and assist in the design and implementation of targeted remediation and pollution prevention projects to address them, based on risk and the probability of widespread and/or long-term effects. Assistance programs should stress management, training, and techniques for pollution prevention; Western nations need to attend to issues (and groups) that can assist in building infrastructure and legitimacy. Technical and managerial aid should be tied to problems that empower Eastern Europe and FSU nations to concentrate on developing systemic capabilities. DOD personnel have the technical knowledge and organizational skills to help the East European and FSU governments begin to address these problems.

Water in the Middle East.

The Middle East is characterized by a relative scarcity of water resources, and by the presence of users of those resources who are members of different cultural, national, ethnic, and religious groups. Population growth is also among the most rapid in the world. An estimated 217.4 million people lived in the northeast Africa and the Middle East area in 1983. By the year 2000 the World Bank estimates that the population will have grown to 337 million or an increase of 55 percent.[29] The combination of resource scarcity, rapid population growth, and social and cultural differences can be volatile. As Peter Gleick notes, "local or regional instability arising from a combination of environmental, resource and political factors may escalate to the international level and become violent."[30] If this occurs in the Middle East, it would threaten U.S. petroleum supply and could involve the use of weapons of mass destruction.

The potential for water resource-related conflicts in the region exists in several river basins. These include classic upstream-downstream issues involving supply and use involving Turkey, Syria and Iraq over the use of the Tigris and Euphrates system; involving Jordan, Syria, Israel and Lebanon on the Jordan

River; and between Egypt and its upstream neighboring states over the Nile River.

Tigris-Euphrates Issues. Turkey has embarked on an ambitious program to develop the water resources of these river systems. The Grand Anatolia Project, consisting of 21 dams, will provide water supply, hydroelectric capacity and irrigation to Turkey. However, downstream water supplies to Syria and Iraq could be reduced by up to 40 percent and 80 percent respectively by these projects.[31] Syria and Iraq have protested these projects as being inimical to their strategic interests, since a majority of their water comes from outside their borders. In the 1970s, Iraq almost went to war with Syria over the reduced flows in the Euphrates produced by the filling of Turkish and Syrian dams coincident with a dry period.[32]

Kurdish separatists fighting Turkey have also been aided by Syria and Iraq as a means of showing these states' displeasure with the Turkish water projects. As of 1992, this insurgency had taken 3,500 lives.[33]

Jordan River. Demand for the limited water available in this basin is already substantial, and is expected to grow as population increases. These waters are shared by Jordan, Syria, Israel and Lebanon. Jordan and Israel already use more than 100 percent of their renewable water resources. In the past 10 years the Palestinian population on the West Bank has more than doubled, further exacerbating differences in access to water between Israel and Palestine, currently estimated at 354 cubic meters/person/day (cmd) for Israelis versus 119 cmd for Palestinians.[34]

The control over headwaters of the Jordan River has been a critical strategic interest of Israel. In the 1967 Arab-Israeli War, Israel occupied these headwaters to ensure control over water. These resources provide approximately 33 percent of the total sustainable water yield to Israel.[35]

Nile River. The Nile is literally the lifeblood of Egypt. Ninety-seven percent of Egypt's water comes from the Nile, yet Egypt is particularly vulnerable to impacts of upstream development or diversion of water, since 95 percent of the Nile's flow originates outside Egypt's boundaries, and comes from the other eight basin states. Additional upstream water development could pose a basic strategic threat. Egypt has indicated its willingness to fight to maintain its access to Nile River flows.[36]

Water resource issues could pose significant sources of conflict in the Middle East. In two of the three cases, actual armed conflict has already taken place. Continued conditions of resource scarcity, population growth and industrial development are likely to place greater demands on these resources. Cultural, religious, ethnic, and political differences among basin states

further complicate the situation. Hostilities which arise over water could quickly escalate to more general conflict which would in turn affect U.S. strategic interests related to petroleum access and honoring treaty or friendship relations.

Haiti.

The manner in which environmental issues can endanger U.S. security interests and involve U.S. forces in life-threatening conflict is demonstrated by recent events in Haiti. The United States has a long economic relationship with Haiti, that, like its neighbor the Dominican Republic, resulted in U.S. forces being sent to its shores during this century to support a struggling government.

Today, Haiti is a threat to U.S. national security. The flood of illegal Haitian immigrants to the United States is a burden that incurs significant domestic political and diplomatic costs, promotes divisive political and legal debate that has diverted foreign policy resources from other more vital international issues, and overwhelms the economic, health and human services infrastructure of the areas to which the refugees arrive. Large numbers of Haitian immigrants carry the HIV virus and have the potential to place disproportionately high demands on the already burdened U.S. health care system. In Haiti, the decline in infant mortality and the cultural norms of its uneducated, rural population have caused the population rate to increase from 2 to 3 percent annually since the 1970s, with average fertility increasing to 6.3 children per female.[37] As a result, Haiti's 6 million population is expected to rise to famine levels of between 9.5 and 15.5 million by 2025.[38] Moreover, diplomatic efforts to resolve the Haitian conundrum have divided State and Defense Departments and very nearly established the precedent of introducing unprotected U.S. military forces into violent, life-threatening situations with no clear objective or possibility of success. Haiti's political difficulties stem from severe environmental degradation that eroded the resource base upon which any government could be successfully established.

Haiti is an example of how ignored environmental problems promote instability. A country's environmental security is threatened when it undergoes change in its quality of life over a short period of time with limits placed on its alternative responses. This can occur when overpopulation consumes elements of the state's resource base at rates that exceed the land's carrying capacity. When migration is constrained, the imbalance becomes chronic. In a desperate search for energy sources, many less developed nations have denuded their landscapes with all the consequences of this depletion; such is the case with Haiti. The burgeoning, poor population, unable to afford imported fuel, has stripped the forests in a constant search for firewood. With 90 percent of the country deforested, the torrential tropical rains

have eroded vast quantities of topsoil, creating a loss of arable land of 1 percent annually.[39] Some of the effects of environmental degradation that have particularly important national security ramifications lag behind the direct cause. The requirement for energy resources in the developing world has this effect.

In Haiti it was known for some time that deforestation was causing social instability. In 1978, the President's Council on Environmental Quality (CEQ) annual report indicated that deforestation was virtually complete and warned that such resource degradation would result in social disruption and instability.[40] By the mid-1980s, the Haitian peasants' continued unchecked harvesting of bush and seedling trees for firewood and cultivation of marginal soil had denuded the landscape of soil retaining flora and allowed devastating erosion and loss of soil productivity. The result has been an exodus of environmental and political refugees to the United States with significant impacts on Florida's economy and social infrastructure, which continues to cause turbulence.

The environmental-energy linkage has profound global implications. For example, the 1978 CEQ report states that for Ouagadougou (then Upper Volta), the forest was completely stripped within a 70 kilometer circle around the urban center. The trees had been harvested for firewood. The average laborer in Ouagadougou spent 20 percent of his income for fuelwood each year.[41] Such actions can directly affect national security because deforestation can lead to desertification. Desertification is the gradual, long-term reduction of soil's productivity and resulting spread of desert-like conditions. It is a major cause of destabilizing migration. Most of the world's drylands are at risk to the desertification processes with at least one sixth of the world's population threatened.

The search for energy resources to support the economies of the industrial states has been a national security issue for some years. What has not been clear to security policymakers, however, is the connection between political instability, environmental degradation, and the energy issue. The search for family energy sources in developing countries such as Haiti has led to resource depletion, large scale migration and instability. DOD has the institutions and technical infrastructure to help these countries develop alternative energy sources that are not high-tech, complicated, and expensive, and by doing so, it would execute its environmental security mission. One of the most important areas in which the Defense establishment can help promote democracy and increase stability is by helping develop and field appropriate technology for an energy starved world. The environmental benefits would be substantial.

THE CAPABILITIES OF THE DEPARTMENT OF DEFENSE

As an element of national power traditionally used to pursue

U.S. security interests, the Department of Defense is a logical choice to execute U.S. environmental security missions. Formally recognizing DOD's environmental security roles, the Secretary of Defense created the Office of Deputy Under Secretary of Defense for Environmental Security during the Clinton administration DOD reorganization and committed DOD to addressing important international environmental issues. To determine how best to use DOD in this effort, it is important to review some of its environmental capabilities.

Considering its broad spectrum of operations, DOD has many assets with which to mitigate environmental threats to national security. The spectrum of DOD operations ranges from the nuclear deterrence/strike roles of the Air Force and Navy to the purely domestic issues supported by the Civil Works Program of the Corps of Engineers. In these roles DOD brings rapid response, excellent organization, and efficient management capabilities. Important environmental issues already addressed by DOD entities include chemical and nuclear demilitarization, toxic and hazardous waste cleanup, and nuclear accident assessment.

However, DOD's installation support capabilities may be the most useful and first called upon in responding to environmental problems. A DOD skill unique among federal agencies is its management of installations that have the characteristics of small towns and communities around the world. This aspect gives DOD the capability to understand not only the technological issues associated with environmental challenges but also the institutional organizations and relationships necessary to solve environmental problems, particularly those associated with the industrial and military base areas of East and Central Europe and the FSU.

Some examples of these capabilities are:

- Training in all aspects of environmental compliance, prevention, restoration, and conservation;

- Assessing and anticipating environmental needs, trends, challenges, and emergent technologies;

- Preparing environmental documentation;

- Satellite, aircraft, seaborne and terrestrial observation, monitoring, sensor, and mapping platforms;

- Cleanup technologies and processes;

- Waste minimization technologies and processes;

- Conservation technologies and processes;

- Restoration technologies and processes;

- Explosive ordinance disposal;

- Chemical and biological weapons accounting, monitoring, transfer, storage, and destruction technologies;

- Nuclear weapons accounting, monitoring, transfer, storage, dismantling, and disposal technologies;

- Surveillance technologies, platforms, command and control mechanisms to monitor treaty obligations;

- Toxic and hazardous waste minimization, storage, monitoring, transfer, and disposal technologies;

- Hazardous material incident response;

- Transfer and cleanup of military installations for civilian use;

- Land and sea mine detection and removal;

- Orbital debris control and tracking;

- Air, land, and sealift to respond quickly, sustainably, and in mass;

- Human health assessment, risk analysis, monitoring, facilities and services (medical);

- Civil affairs;

- Financial management;

- Legal services;

- Interagency partnerships and relationships;

- Accountable and responsive chain of command and control;

- Development of energy sources;

- Established communications networks;

- Public participation processes;

- Public affairs;

- Land and installation management;

- Environmental laboratories;

- Information management;

- Infrastructure planning and development;

• Coastal and ocean sciences;

• Climatology;

• Habitat/Ecosystem restorations;

• Contract preparation, solicitation, award, management and litigation for all capabilities listed; and,

• Policy, regulations, specifications, and guidance development on all issues listed.

DOD Research and Development for Environmental Security.

As part of developing a strategic plan for environmental security, consideration must be given to incorporating Tri-Service/DOD RDT&E efforts concerning environmental issues. The Tri-Service Environmental Quality Research and Development Program (a joint service program that consolidates existing science and technology funded research) will provide numerous technologies appropriate to address national, regional, and global environmental issues. To achieve effective technology transfer, however, a mechanism with appropriate funding must be developed and incorporated into the program.

In addition, new environmentally related initiatives under DOD control also have great potential to provide technologies and data appropriate for addressing environmental security issues. The Strategic Environmental Research and Development Program (SERDP), a joint DOD/DOE/EPA program, was established by Congress in P.L. 101-510 on November 5, 1990.[42] This program facilitates DOD and DOE efforts to address, through basic and applied R&D, the development of data and technologies that will enhance DOD and DOE capabilities to meet their environmental obligations. As one of its tenets, the program also is intended, "to identify and foster research, development, and demonstration programs to help solve major national and international environmental problems through the use of the Departments' technical and research capabilities, as well as their unique data collection and analysis capabilities."[43] The SERDP is structured into six thrust areas: cleanup, compliance, conservation, pollution prevention, global environmental change, and energy conservation/renewable resources. Each area will provide technologies that have applications for addressing environmental security issues. For example, under global environmental change, a major research thrust is intended to, "conduct fundamental studies of essential environmental processes addressing identified global environmental change issues."[44] Another responsibility is to identify national assets and capabilities that can concurrently address environmental concerns of DOD and DOE.

In summary, DOD has within its research and development

programs numerous opportunities to apply ongoing research to environmental security issues. However, to transfer developed technologies to the address of environmental security issues effectively, an implementing process must be developed.

Medical Support in Environmental Security.

The Army Medical Department (AMEDD) has unique resources and capabilities to perform risk assessments of environmental issues. The centerpiece of these resources is the Army Environmental Hygiene Agency (AEHA), with its main element located at Aberdeen Proving Ground, Maryland and its three direct support activities located at Ft. Meade, Maryland; Ft. McPherson, Georgia; and Fitzsimons Army Medical Center, Texas. This organization has over 650 employees representing the disciplines associated with occupational and environmental health. In addition to AEHA, which has a world-wide mission, two other organizations exist with similar but more limited capabilities: the U.S. Army Pacific Environmental Health Engineering Agency (USAPACEHEA) in Japan and the 10th Medical Laboratory in Germany.

These organizations share some common characteristics. First, the work they perform is accomplished with in-house resources, in contrast to most other science and technology organizations and laboratories, which rely heavily on contractor support to execute their missions. Second, military personnel comprise a significant portion of their staffs. At AEHA approximately 30 percent of the authorized positions are military; over 75 percent of the staffs at the 10th Med Lab and USAPACEHEA are military. These in-house capabilities allow the organizations to respond quickly to emergency requests, and the staffing allows for deployment to areas that are sometimes inaccessible to civilians.

The role that they perform in support of environmental security issues is primarily in health risk assessment. The AMEDD can deploy physicians, toxicologists, engineers, and other technical specialists to an area, where they assess the potential health or environmental risk and prioritize the environmental security hazards. They can also produce the medical input required when decisionmakers are determining appropriate levels of cleanup, remediation, or treatment. Risk assessment-based decisions not only mitigate liability, but provide a basis for the cost effective use of resources.

The unique in-house expertise of these organizations, combined with their rapid deployment capability, has been a major environmental security asset. The AEHA was selected to assess the potential health effects of the oil fires in Kuwait on DOD personnel. The data collected during the 8-month sampling effort is considered the most comprehensive ever gathered on such an environmental health issue. DOD, through AEHA, was the only organization capable of deploying the number and type of

technical specialists, with the necessary equipment, and in the time frame required to perform the assessment. This effort, which received close support from EPA and the National Oceanic and Atmospheric Agency (NOAA), is likely to be used as a basis for major studies and analysis for years and will also be used by the Veterans Administration (VA) in their registry of Desert Storm veterans. It also demonstrates the AEHA's capacity to provide timely assistance for disaster relief.

Another example of the military's unique capabilities is the assignment of AEHA teams to the former Czechoslovakia to survey contamination at a former Soviet air base. The team provided assessment data and recommendations on cleanup and possible conversion to civilian use. The AEHA also sent health physicists, expert in radiation, to Chernobyl to analyze the health risk associated with that environmental disaster.

AMEDD professionals have been deployed in conjunction with other Federal agencies, such as Department of State and EPA, as well as to augment existing Army teams deployed to Somalia and to Florida (Hurricane Andrew).

Managing the Chemical Threat.

The U.S. Army Chemical Corps, a multidisciplined organization of officers and enlisted personnel, determines the presence and type of chemical warfare agents and manages the demilitarization of U.S. chemical weapons. The Chemical Corps is trained to decontaminate these agents and leave behind "non-detectable" traces. One of its major resources is a $15 million EPA-permitted training facility where live chemical agents are used to contaminate equipment, which soldiers are then trained to identify and decontaminate. In addition, the Chemical School, the location of the Chemical Decontamination Training Facility, has specially outfitted laboratories for handling hazardous and toxic chemicals. All of these skills, abilities, and knowledge are transferable to regions such as the FSU and Eastern Europe which have extensive military, chemical, and nuclear contamination problems requiring mitigation.

The Chemical Corps can provide the following skills to the U.S. assistance community:

- Determination of chemical presence;
- Identification of chemical;
- Training assistance;
- Emergency spill training where real agents can be used;
- Decontamination; and,
- Chemical demilitarization management.

In addition to its expertise in training and decontamination, the Corps has a cadre of experts trained in the handling, storage, and transportation of chemical munitions. Further, because it is responsible for destroying X toxins of the U.S. Chemical Weapons Stockpile, the Corps could be used to assist other nations in destroying their chemical weapons.

Environmental Security and the Unified Command.

The primary mechanism by which the United States employs its military element of power in the international arena is the system of unified commands. These theater-level commands have regional responsibilities and support U.S. foreign policy and national security objectives.

The U.S. European Command (EUCOM), established 40 years ago to support NATO, is responsible for the largest foreign area of any of the unified commands with over 70 countries in Europe, North and sub-Sahara Africa and the Near East. No longer focused on halting a Soviet threat, EUCOM now supports NATO's New Strategic Concept and U.S. humanitarian interests through military-to-military and security assistance programs. Environmental security missions fit easily into the EUCOM organization and objectives.

In Europe and Africa, the ability of the United States to support democratization and the economic growth of developing countries is enhanced by EUCOM's nontraditional military assistance programs which now include environmental security missions.

In the July 1990 London Declaration, the Heads of State and Government of the 16 NATO nations declared that the NATO countries and the countries of the former Warsaw Pact were no longer adversaries. The Alliance nations further stated their intentions to embark on confidence and security building measures (CSBM) designed to lessen international tensions between the former adversaries. The formation of the North Atlantic Cooperation Council (NACC) furthered the goals of peaceful cooperation, but the need for specific CSBMs has not only persisted, but has increased. The Alliance nations have embarked on both Alliance and bilateral efforts in military outreach programs of benign intent, including environmental security programs. EUCOM already has several successful environmental security programs underway.[45]

In the bilateral spectrum with the developing nations of Africa, the U.S. State and Defense Department Security Assistance Program has a long and successful history. Concerning environmental security specifically, since 1991 these programs have included support of African biodiversity and conservation efforts. Naval patrol boats, communication equipment and aerial

surveillance aircraft also were provided to West African littoral states to control foreign flag poachers that were overfishing, or not paying the required fees. The resulting increased revenue protects fisheries from overharvesting and boosts the states' economies.

In 1992, EUCOM established a Military-to-Military Contact Program for the East and Central Europe that now includes such nations as Albania, Belasarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Slovakia, Slovenia and Ukraine.[46] Reflecting overall U.S. foreign policy objectives of establishing partnerships with these nations, this program could evolve into a form similar to the African security assistance program, emphasizing environmental security. In 1993, at the request of EUCOM and the Lithuanian government, the Air Force Center for Environmental Excellence (AFCEE) sent a team of environmental technical experts to Siauliu Airfield, Lithuania to conduct a preliminary field assessment of pollution cleanup requirements.

The Lithuanians faced a difficult challenge. The city of Siaulia now owned the recently abandoned Russian military airfield there. The airfield had been host to a large military operation. At its peak, the 11 square kilometer base had over 100 assigned combat aircraft, including fighters, transport, and airborne warning and control system aircraft. The aircraft were nuclear capable, and there was a large nuclear weapons storage area. Moreover, the airport had been a major maintenance retrofit base for Soviet aircraft being flown by Third World nations. The Lithuanians knew very little about the military operations of the base due to Soviet security. However, they were deeply concerned about three types of pollution at the airfield: soil radiological contamination, hydrocarbon (jet fuels, which they believed had polluted the ground water), and heavy metal contamination of the soil. The Lithuanians wanted to restore the base for use as a civilian airline retrofit and airfield facility but could not properly assess the environmental contamination.

The AFCEE, which was partnered with the EPA in this endeavor, was an ideal DOD agency to provide technical support, because one of its primary missions is the environmental cleanup of U.S. military airfields to be returned to civilian use. The AFCEE team consisted of environmental, bioenvironmental, and health physics experts. During the team visit, preliminary validations in radiological and hydrocarbon contamination were conducted. Pollution in these two areas did not appear to be as severe as the Lithuanians originally believed, and the technology used by DOD in cleanup of U.S. bases easily could be transferred to help the Lithuanians conduct further assessments. Although the damage is serious, the Lithuanian authorities had concluded erroneously that catastrophic damage had occurred because limited local testing methodologies were providing an inaccurate analysis. The assessment visit provided a clear understanding of the future potential for the airbase, and data upon which the

Lithuanians can base requests for donor cleanup and development loans. As a direct result of the visit, the Lithuanian Air Force Chief of Staff ordered the creation of an Air Force environmental protection committee, and has opened military bases to representatives of the Lithuanian environmental department, EPD.[47] Such visits mitigate environmental problems that impede the economic development necessary to support the Lithuanian government's efforts to establish a successful democracy.

According to the EUCOM program coordinator, the most important environmental security product needed in this case, and in many FSU and East European cases as well, is the common testing methodology used by DOD. DOD's environmental assessment technology, management and technical procedures are needed to solve these pollution problems. The military-to-military visit was successful, and the Lithuanians considered it to be very valuable and have requested follow-on DOD efforts. Such environmental security programs can be implemented by all of the unified commands using existing security assistance or military-to-military programs.

The DOD unified commands have existing and evolving programs that provide the partnering mechanism between the U.S. State Department and the DOD to address the environmental security goals of the National Security Strategy. The unified commands already have the organizational infrastructure to facilitate and orchestrate the types of environmental assistance most needed at the earliest stages of remediation. This is particularly true of the military and industrial waste sites of East and Central Europe and the former Soviet Union.

• *Environmental Testing and Measurement Methodology, as well as Access to Ecological Databases.* Data are needed to determine the state of ecological condition or pollution. This is important for a variety of reasons: ecological damage may be over- or understated by emerging democracies; without proper assessment, the state cannot seek donor funding to effect cleanup.

• *Low Cost Cleanup Technology*. The developing nations are particularly vulnerable to economic exploitation in unnecessarily expensive cleanup techniques, lessons already learned in the West. If unnecessarily stringent levels of cleanup are performed, or the techniques themselves are the more expensive to achieve a desired state, the developing country will waste its own scarce funds or those of the international donor community. Economically viable technology has already been developed for DOD and is immediately available for technology transfer.

Environmental Cooperation with NATO.

Environmental security cooperation with NATO is an area of great potential benefit. NATO is struggling to identify roles and missions that will help it maintain its relevance in the new

global security architecture. The waning of the Soviet threat has led to criticism that NATO lacks a current mission, and a lessening of the U.S. leadership role necessary to make NATO an effective organization. An increased environmental security mission, with major U.S. contributions in leadership and technical expertise addressing the significant environmental problems that now threaten European and U.S. continental interests, would provide NATO a visible and relevant role. Establishing military-to-military based environmental security assistance programs with the military organizations of the developing world and former East Block cooperation partners would give meaningful assistance to newly-formed democratic regimes when the legitimacy of these governments is being threatened by difficult environmental problems that vastly exceed government capabilities.

To achieve such a program, NATO formally recognized environmental problems as a security threat. The North Atlantic Council has redrafted its Strategic Concept to recognize the realities of the new threat. The Alliance Strategic Concept now states,

> Risks to Allied security are less likely to result from calculated aggression against territory of the Allies, but rather from the adverse consequences of instabilities that may arise from serious economic, social and political difficulties, including ethnic rivalries and the territorial disputes, which are faced by many countries in Central and Eastern Europe. . . . They could . . . lead to crises inimical to European stability and even to armed conflicts . . . and that security and stability have political, economic, social, and *environmental* elements as well as the indispensable defense dimension.[48]

In the spirit of the London Declaration and the Charter of Paris for a New Europe, NATO is undertaking confidence- building activities with East and Central European countries in an effort to use dialogue and cooperation to reduce the misunderstandings that lead to conflict. In addition, both the NATO Advisory Panel on the Environment and Committee on Challenges of Modern Society (CCMS) have established pilot studies and projects to address significant environmental problems such as the study of *Cross Border Environmental Problems Emanating From Defense Related Installations and Activities,* which is being executed under the auspices of the NACC.[49] CCMS studies are also addressing critical environmental security problems, such as nuclear weapons disposal in the seas surrounding Europe and the pollution runoff into marine estuaries. Cooperation partners participating in the Advisory Panel's projects and CCMS studies include Poland, the Ukraine, Russia, Estonia, Hungary, Lithuania and, in the near future, other FSU and Eastern European countries. These countries are interested in expanding their role in and cooperation with

NATO.[50] Doing so would promote the dialogue and partnerships that reduce misunderstandings that can lead to conflict. Further, it would take advantage of a common nonmilitary but strategically important security issue, to unite the futures of East and West in a "partnership" that is nonthreatening to Russia.

NATO's environmental cooperation with countries in areas important to its strategic interests should not be limited to CCMS studies. NATO could build upon the Security Assistance and Military-to-Military Contact Programs of EUCOM and draw upon DOD technical capabilities to create an environmental security program focused on helping countries in its area of strategic interest to solve the environmental problems that, left untreated, could lead to regional or intrastate conflict, or the undermining of the governments' legitimacy.

The diverse technical resources present in the NATO militaries provide the means to offer environmental assessment, cleanup training, engineering, public health, and sanitation support often unavailable in the target countries. The NATO environmental security teams could tailor their assets and capabilities to reflect the specific needs of the host country. Roles for these teams could include training military or host government civilian officials in critical environmental skills, conducting joint remediation exercises and broadening the military's general capacities for supporting the host government's nascent environmental programs.

The resulting improvement in primary water treatment facilities, disaster relief management, environmental assessment, and cleanup of toxic and hazardous waste at former Warsaw Pact military installations would reduce significant environmental threats, cement the bonds of friendship and cooperation between former antagonists, and offer a meaningful contribution to the environmental capabilities of developing countries.[51]

HOW SHOULD DOD PROCEED?

Organizing to Meet the Threat.

If the United States is to meet the threat to national security posed by environmental factors efficiently, it should not attempt to develop new organizations. Rather, it should adapt and coordinate the same organizations and practices that have functioned effectively during the four decades of the cold war, focusing all relevant agencies on the environmental security issue. The relationships among elements of the basic national security apparatus (The National Security Council [NSC], its staff, the intelligence community, the Joint Staff, and OSD offices and agencies) do not need to be reinvented. Many processes and procedures can be retained but with a shift in orientation and minor organizational changes.

The Threat and Strategy Development.

The intelligence community should be tasked by the NSC to analyze the environmental threat in strategic terms. This analysis should be performed in the context of relationships between environmental factors and political, economic, psycho-social, and military conditions. In particular, regional stability should be examined with respect to changing environmental conditions. A threat assessment of this kind will require some new linkages and capabilities within the intelligence community. As these threats are assessed they will likely impact the National Security Strategy which, in turn, will affect the National Military Strategy through the OSD and Joint Staff planning systems. For example:

• The National Security Council (NSC) staff will forge new links with various Federal agencies and working groups in the science and technology area. As environmental threats are made explicit by the intelligence assessments, the NSC staff must formulate appropriate strategies in the documents dealing with national security policy.

• New interagency working groups must be formed to develop strategic assessment options and recommendations and to coordinate specific actions. This process is well defined and understood by the professional staffs of all Federal agencies. All that is required to start the process identifying the issue and assigning responsibility.

• The OSD Office of Net Assessment will need to examine the significance of environmental factors to regional security. As OSD offices begin to review the problem, the Joint Staff will react.

• The Joint Staff should assess environmental factors as strategic issues. Currently, the J-4 (Logistics) has the only "environmental" responsibility. The environment is viewed strictly as a technical matter. When the J-5 (Strategy and Policy) begins to study a problem it will be placed in a strategic context.

• The Strategic Planning System should begin to assess environmental factors. This process will eventually trigger the regional expertise of the Unified Commands.

Strategic Initiative.

DOD resources that could have a major effect upon environmental problems include the planning, coordination, and communications capabilities of the Unified Commands as well as of the Joint and OSD staffs. Unified Commanders, unlike ambassadors, have *regional* responsibilities, and planning staffs, as well as communications and logistics capabilities. They also manage the

U.S. Security Assistance Program.

The most comprehensive method to bring DOD resources to bear upon global environmental security objectives is through the security assistance process. In conjunction with ambassadors and the State Department, DOD and the Services have long practiced security assistance in many forms. Nation building, or nation assistance, is not a new concept; many of the procedures developed for the Offices of Defense Cooperation could be transferred to actions which have a stabilizing effect from an environmental perspective.

The same interagency procedures which provide the coordinated road building programs in Central America, for example, could be used to address environmental security assistance projects. Military-to-military contacts could be more focused and given specific environmental objectives as part of an overall strategic initiative. The Security Assistance Program has already been extensively used for environmental projects. The U.S. military has provided support to biodiversity, natural resource conservation, and fishery management projects in a number of African states. These projects can pay significant dividends in regional economic development and stability if they are a part of a planned and coordinated strategy. As the Army's keystone doctrinal manual states, these are appropriate roles for the military.

> Army forces have participated in operations other than war in support of national interests throughout their history. They have protected citizens at the edge of the frontiers of an expanding America; built roads, bridges and canals; assisted nations abroad; and served our nation in a variety of other missions. Thus, operations other than war are not new to the Army. Their pace, frequency and variety, however, have quickened in the last three decades. Today the Army is often required, in its role as a strategic force, to protect and further the interest of the United States at home and abroad *in a variety of ways other than war*.[52]

The use of military forces to solve nonmilitary problems is not unique. We have seen the Soviet military playing a critical role in the immediate reaction to the Chernobyl nuclear accident, and the use of American soldiers to battle the fires in Yellowstone Park and assist in other environmental disasters from hurricanes to the Exxon *Valdez* oil spill. This suggests that the military, in the right circumstances, has unique contributions to make to environmental security.

To understand why the military should be used in this nontraditional role, one must recognize that the military organizations in most developing countries, to include the FSU, are well-organized and well-resourced, present in all regions of

the country and a very strong voice within the government. In certain situations, the DOD presence will give U.S. environmental assistance an avenue into the country that cannot be otherwise achieved. Other foreign assistance programs of the State Department, such as those of USAID, could be enhanced by including an appropriate military component. In times of declining resources, it makes sense to take advantage of an existing multi-agency program in the security assistance area to achieve U.S. interests. DOD scientific resources, such as the Chemical Corps, environmental organizations and medical personnel, bring important assets to such missions, as does the U.S. Army Corps of Engineers, which has a long history of international water resource management and construction work.

The single best mechanism with which the United States can address international environmental problems that could lead to conflict or instability is the State Department/ Department of Defense Security Assistance Program. Because it reflects U.S. foreign policy, and local ambassadorial and host nation priorities, it will ensure that environmental missions undertaken by DOD assets are the most appropriate, and designed to achieve U.S. regional objectives. Moreover, the Security Assistance Program is popular with Congress when it is dedicated to executing environmental missions. In FY 1991, Congress earmarked $15 million for the African biodiversity and conservation program of the EUCOM Security Assistance Program. Congress appropriated an additional $15 million for the African environmental Security Assistance Program in FY 1993 at a time when Congress was actively seeking to cut security assistance programs to the bone. That Congress is willing to fund environmental security assistance programs is noteworthy and should be recognized for the opportunity that it is.

The Security Assistance Program is essential for the United States to maintain the military-to-military contacts with developing countries that ensure overflight, base access, and influence. *The functional areas addressed by the Security Assistance Program are less relevant than the program's continuance. The continued communication between the United States and this critical governmental element of power in the developing world is important. A broadened and expanded environmental security assistance program would allow the United States to maintain these lines of communication while mitigating environmental problems that could undermine the legitimacy of the host country or lead to instability or regional conflict*. Further, such a program would support NATO's New Strategic Concept and efforts to address nonmilitary threats to European security. The organizational infrastructure of the existing U.S. Security Assistance Program could funnel the extensive DOD environmental assets to regions and countries in a tailored fashion that has the best possibility of providing appropriate assistance and achieving U.S. environmental security objectives.

Conclusions and Recommendations.

The environment will continue to have a significant role in international stability and should, therefore, be seriously addressed by U.S. national security policy. As a key executor of this policy, DOD has capabilities that should be used in resolving the environmental challenges that the United States must face. Through effective leadership, partnership and resources, U.S. Federal agencies can serve as an environmental security magnet, effectively bringing together the international community to mitigate issues that could lead to instability and conflict, promote sustainable economic development, and preserve our planet.

Recommendations:

• Make the DOD/State Department Security Assistance Program the flagship of environmental security efforts. A reconfigured and renamed Security Assistance Program that emphasized environmental security would provide a broader spectrum of opportunities to obtain such strategic objectives as basing, overflight agreements and influence, while encouraging civilian controlled and democratically responsible militaries in developing countries. Such a program would also fight the dangers of isolationism and instability, while supporting the humanitarian interests of democratic reform, economic development and conflict resolution sought by Congress.

• Appoint a special assistant to the National Security Advisor for international environmental security affairs and create an interagency working group, chaired by the special assistant, to develop a Presidential Decision Document (PDD) establishing U.S. environmental security policy. Guidelines are needed. This PDD must task the subordinate agencies, such as the intelligence community, EPA, DOD and Department of State, to develop implementing plans.

• Establish environmental security as a *principal* objective of the National Security Strategy and include environmental issues in National Security Council strategic threat assessments and foreign policy planning. Currently the importance of environmental problems to political instability and conflict is not fully recognized in this process and no single administration agency has been tasked with coordinating U.S. efforts to address environmental security issues. As a result, the environmental security programs of agencies and organizations such as the Department of State and the AID, CIA, EPA, DOD, nongovernmental organizations, the United Nations and NATO lack a central focus, source of direction, and ability to coordinate their efforts to maximize efficiencies.

• Promote the linkage between environmental security objectives and achieving the current, primary congressional and administration interests of democratic reform, economic

development and conflict resolution. The four primary threats to these interests identified by the Secretary of Defense: regional dangers, nuclear dangers, dangers to democracy and economic dangers, have significant environmental components.

• Develop synergistic partnerships with other countries, agencies, and organizations that will allow DOD to enhance the effectiveness of its environmental security programs. Coordinating DOD and AID environmental efforts, for example, will multiply the capacity of the United States to achieve its regional national security objectives.

• Avoid duplication of efforts and the large start-up costs of new programs by capitalizing on existing, well-established international security programs. Such programs as the Security Assistance Program of the Department of the State, AID technical training, EPA East European demonstration projects and technical advice and training have the potential to execute the required environmental security missions.

• Use environmental security initiatives to promote the transfer of appropriate environmental technology and expand the global market for U.S. corporations.

• Use the existing DOD organizational structure to execute the environmental security mission. Properly resourced, such organizations as the Air Force Center for Environmental Excellence, Army Health Command and Chemical Corps, and Army Corps of Engineers, provide the necessary means and preclude unnecessary start-up costs, which could needlessly divert funds from operational readiness.

• Use environmental security missions to enhance operational capabilities. Intelligence, logistical and combat arms skills may be required to address game poaching, overfishing problems, and driftnet agreement violations, and may provide a live environment that can be more effective than training.

• Use DOD capabilities to enforce international treaties and agreements. The chief weakness of all such agreements is the absence of global monitoring and enforcement capabilities. Through its technical and intelligence capabilities, DOD can assist in evaluating treaty signatory compliance and can support U.N. enforcement efforts. The U.S. Navy, for example, could enforce international whaling and driftnet fishing agreements that protect rare species and fish stocks essential to U.S. and other nations' economic security.

• DOD should take advantage of the extensive nation building assessment and construction skills of the U.S. Army Corps of Engineers in the developing world Security Assistance Program and give the Corps the chairing of a multiagency task force for evaluating or developing the guidelines and criteria for DOD involvement in environmental security missions.

• Create a DOD environmental crises monitoring center to warn the policymaking community of chronic environmental problems that could lead to conflict before they have grown into political disputes, positions have hardened, and policy options have narrowed. DOD has the data collection and analysis abilities to execute such a mission, as well as the resources to mitigate the underlying problems.

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