Foreword

Geoffrey D. Dabelko, Editor

What are the linkages among environment, population, and security? The question presupposes clear definitions of each term, something that has proven elusive in our discussions at the Wilson Center. Defining these terms and articulating their linkages often depend on one's particular perspective. Not surprisingly, where one sits frames and shapes one's understanding and response to these complex global issues. Yet taken separately or together, environment, population, and security are widely recognized as posing fundamental challenges to all levels of social, economic, and political organization.

As an information clearinghouse on these critical topics and their interconnections, the Environmental Change and Security Project (ECSP) fosters dialogue among the many interested parties in the practitioner and scholarly communities. This annual journal seeks to bring together and highlight important research, policy developments, and ongoing debates. In addition to the *Report*, ECSP maintains an active website at http://ecsp.si.edu that has undergone several changes over the past year. A new section has been added entitled "ECSP Current Events." All ECSP sponsored events and new publications are summarized and posted to our site along with photographs and often transcripts and working papers. ECSP has also started the ECSP-FORUM, a listserv (an email discussion group). This electronic discussion forum, which operates via e-mail, serves as a means for practitioners, scholars, and policymakers to discuss relevant issues and research, post current policy questions, and list relevant policy, scholarly, and teaching resources. Discussions are archived and fully searchable through the ECSP Web site, providing a convenient tool for researching information at a later date. We hope you find these resources useful and welcome your feedback as we strive toward making our activities more helpful for a wide range of purposes.

Much of the work in this field has focused on environment, population, and security connections in rural areas of the developing world. By contrast, in the first article featured here, Ellen Brennan of the United Nations Population Division examines population, environment, and personal security in the world's urban areas. Addressing another neglected area of inquiry, Nils Petter Gleditsch and Indra de Soysa, from the International Peace Research Institute, Oslo, investigate linkages between food and violent conflict. Alexander López of the National University of Costa Rica explains how the Brazilian state frames environmental concerns as central to state security and state sovereignty.

In our special reports section, NATO's Committee on the Challenges of Modern Society has just completed an international, multi-year effort to specify environmental security in an international context. Co-chaired by Gary D. Vest of the U.S. Department of Defense and Kurt M. Lietzmann of the German Ministry for the Environment, Nature Conservation, and Nuclear Safety, this pilot study will be influential in shaping NATO's future approaches to environmental security. The Phase II results of the U.S. State Failure Task Force provide insights into the most extensive quantitative investigation of what causes "state failure." Requested in 1994 by Vice President Al Gore, this ongoing research effort, overseen by the U.S. intelligence community, has consistently examined environmental, demographic, and health variables, developing a mediated model of the environment's contributions to state failure. And finally, a report from the University of Michigan Population Fellows Programs provides examples of the on-the-ground struggles to answer the question posed at the start of this foreword. Experiences from population-environment field placements provide clear evidence for the multiple linkages as well as some grassroots approaches to meeting the challenges they pose.

These articles accompany reviews of 14 new books or reports in the field and 30 ECSP meeting summaries that feature comments by Gro Harlem Brundtland, Daniel Glickman, J. Brian Atwood, Richard Lugar, Frank E. Loy and Jacques Diouf among others. Other regular features include update sections on Internet sites, bibliographic citations, official statements, and nongovernmental, intergovernmental, and academic activities.

Finally, in the last year, the Environmental Change and Security Project has greatly benefited from two fundamental changes at the Wilson Center. Lee H. Hamilton assumed directorship of the Wilson Center in January 1999 after 34 years of distinguished service in the U.S. Congress. His energetic and demanding leadership has renewed the Center's efforts to provide "knowledge in the public service." His insight as a senior statesman dramatically enhances ECSP's ability to provide policy-relevant programming and publications. Secondly, the Wilson Center moved into its own space for the first time in its 30-year history. We miss the charm of the Smithsonian Castle, but our new home in the Ronald Reagan Building on Pennsylvania Avenue provides ECSP with a state-of-the-art facility. We hope you find our activities and this publication useful, and urge you to visit us in Washington or on-line at http://ecsp.si.edu.

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Population, Urbanization, Environment, and Security: A Summary of the Issues

by Ellen M. Brennan

Abstract: To understand the critical linkages between urbanization, public health and habitat, the environment, population growth, and international security, this article highlights the trends in urban growth, particularly in the developing world, and their potential to affect the international community. Issues addressed include migration to urban centers, the immediate environmental and health impacts of urban pollution on developing country cities, and the link between crime and security.

Introduction

In the latter half of the twentieth century, megacities have been on the rise and future projections for the twenty-first century show an increase in population growth in developing countries' urban centers, with potential catastrophic effects at the international level. To understand the critical linkages between urbanization, public health and habitat, the environment, population growth, and international security, this article highlights the trends in urban growth, particularly in the developing world, and their potential to affect the international community. Issues addressed include migration to the urban centers, the immediate environmental and health impacts of urban pollution on developing country cities, and the link between crime and security.

According to the United Nations Population Division, the world will pass the historical six billion mark in October 1999. Recently, the United Nations issued long-range projections to 2150. According to the medium-fertility ("most likely") scenario, world population will stabilize at slightly under 11 billion persons around 2200.

One of the most striking features of world population growth is the rising predominance of the developing world. Currently, 81 million persons are added annually to the world's population—95 percent of them in developing countries. According to the United Nations' long-range projections, the population of Africa will nearly quadruple—from 700 million persons in 1995 to 2.8 billion in 2150. Significant growth is also projected for Asia. China is projected to grow from 1.2 to 1.6 billion inhabitants. India, increasing from 900 million to 1.7 billion, will surpass China to become the world's largest country. The rest of Asia is projected to grow from 1.3 to 2.8 billion. Latin America is projected to increase from 477 to 916 million, whereas Northern America (Canada and the United States combined) will increase from 297 to 414 million. Europe is the only major geographical area whose population is projected to decline—from 728 million in 1995 to 595 million in 2150 (United Nations, 1998a).

The second striking feature is related to urban growth. Although the growth of world urban population has been slower than projected twenty years ago, it has nevertheless been unprecedented. In 1950, less than 30 percent of the world's population consisted of urban dwellers. In a few years, roughly around 2006, a crossroads will be reached in human history when half of the world's population will be residing in urban areas. Between 1995 and 2030, the world's urban population is projected to double—from 2.6 to 5.1 billion, by which time three-fifths of the world's population will be living in urban areas (United Nations, 1998b).

As in the case of total population, there will be a significant redistribution of world urban population between the developed and the developing regions. Between 1950 and 1975, 32 million new urban dwellers were added annually worldwide—about two-thirds in the developing countries. Currently, 59 million new urban dwellers are added annually—89 percent in developing countries. By 2025-2030, 76 million will be added annually—98 percent in developing countries.

Looking at the regional breakdown, Africa has the lowest level of urbanization and the fastest urban growth. Currently, a

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little more than one third of Africans are urban dwellers; by 2030, the proportion will be a little more than half. The problem facing much of Africa is that such rapid rates of urban growth make it exceedingly difficult to provide services. The urban growth rate for Africa as a whole currently is around 4.4 percent. East Africa is growing at 5.6 percent per annum and West Africa at 5.1 percent, with individual countries growing at even higher rates. Projections show that the growth rate for Africa as a whole will stay above four percent through 2005 and above three percent until 2020-2025.

The region of Latin America and the Caribbean is the most urbanized region in the developing world. Between 1995 and 2030, 249 million people will be added to the urban population of this region, bringing the percentage of people living in cities to 83 percent. Asia has a level of urbanization similar to that of Africa—a little more than one third in 1995. Asia as a whole, however, will have to absorb huge population increments—a total of 1.5 billion new urban inhabitants by 2030. South Asia faces particularly daunting prospects, with India having to absorb as many as 385 million new urban inhabitants between 1995 and 2030, Pakistan 113 million, and Bangladesh 55 million (United Nations, 1998b).

A central characteristic of current world urbanization trends is that megacities—cities with populations of ten million or more—are becoming larger and more numerous, accounting for an increasing proportion of urban dwellers. At the same time, more than half of the world's population continues to live in cities with fewer than 500,000 inhabitants. Currently, there are 14 cities in the world with over ten million inhabitants, ten in developing countries. By 2015, there will be 26 cities with over ten million inhabitants—22 in developing countries (18 in Asia, four in Latin America, two in Africa) (Table 1). These megacities will shelter 418 million inhabitants (10.6 percent of world urban population). By 2015, there will be 38 cities of five to ten million inhabitants, representing 6.7 percent of world urban population. There will be 463 cities (three-quarters in developing countries) of one to five million inhabitants—representing nearly a quarter (23.6 percent) of world urban population. Between 1950 and 1995, it is interesting to note that the percentage of population worldwide residing in the 407 cities of 500,000 to one million inhabitants, remained nearly constant—at around nine percent, both in

Table 1

Urban agglomeration and Country	Population (thousands) 1975	1995	2(
Less developed regions:			
Beijing, China	8545	11299	15
Bombay, India	6856	15138	26
Buenos Aires, Argentina	9144	11802	13
Cairo, Egypt	6079	9690	14
Calcutta, India	7888	11923	17
Delhi, India	4426	9948	16
Dhaka, Bangladesh	1925	8545	19
Hangzhou, China	1097	4207	11
Hyderabad, India	2086	5477	10
Istanbul, Turkey	3601	7911	12
Jakarta, Indonesia	4814	8621	13
Karachi, Pakistan	3983	9733	19
Lagos, Nigeria	3300	10287	24
Lahore, Pakistan	2399	5012	10
Metro Manila, Philippines	5000	9286	14
Mexico City, Mexico	11236	16562	19
Rio de Janeiro, Brazil	7854	10181	11
São Paulo, Brazil	10047	16533	20
Seoul, Republic of Korea	6808	11609	12
Shanghai, China	11443	13584	17
Tehran, Iran (Islamic Rep. of)	4274	6836	10
Tianjin, China	6160	9415	13
More developed regions:			
Los Angeles, USA	8926	12410	14
New York, USA	15880	16332	17
Osaka, Japan	9844	10609	10

developing and developed countries. The same is true for cities with fewer than 500,000 inhabitants. Although they have remained relatively stable with regard to population growth, secondary cities are nevertheless critical. Around half of the urban population in both the developing and developed world live in cities of fewer than 500,000 inhabitants (United Nations, 1998b).

The emergence of megacities is a modern phenomenon, occurring over the last half century. In 1950, only New York had a population of ten million or more. In addition to the increase in their number, megacities are becoming considerably larger. The minimum population size for a city to make the list of the world's 15 largest urban agglomerations was 3.3 million in 1950. By 1995, a population of 9.9 million was required as the threshold. Projections for the year 2000 show Dhaka, with 11 million inhabitants, as the fifteenth largest urban agglomeration; by 2015, Los Angeles, with 14.2 million, is expected to be fifteenth on the list (United Nations, 1998b).

Whereas the average annual rate of population growth was one percent or less for megacities in the developed world during 1970-1990, megacities in developing countries have exhibited significantly higher rates of population growth, as well as a larger range of rates, than those in developed countries. Some megacities are continuing to grow very rapidly. Dhaka, for example, grew by 7.6 percent per annum between 1970 and 1990, implying a doubling time of only nine years, while Lagos grew by 6.7 percent, implying a doubling time of a little more than ten years (United Nations, 1995a).

Contrary to the alarmist predictions about "exploding cities," the growth of most of the world's megacities has been slowing down, in some instances quite dramatically. Mexico City is a case in point. Whereas projections prepared by the United Nations and the World Bank in the 1970s forecast a population for Mexico City in the range of 27-30 million in the year 2000, Mexico City's population in 1995 was 16.6 million—projected to reach 18.1 million in the year 2000 and 19.2 million in 2015 (United Nations, 1998b). One explanation for the decline in megacity growth rates appears to be a deceleration in rates of national population growth. According to Chen and Heligman (1994), a simple regression indicates that the national population growth rate explains 47 percent of the variation in megacity growth rates in developing countries. Of course, the fact that India's six megacities grew at rates of between two and 4.5 percent per annum during 1970-1990 indicates that other forces must surely be involved. Still, the relationship between megacity and national population growth rates is quite remarkable, given that megacities generally comprise only a very small proportion of their national populations (Chen and Heligman, 1994).

It is difficult to generalize about the factors behind the slowdown in the growth of many of the world's megacities, as numerous complex factors are involved. Again, Mexico City provides an example. In addition to voluntary emigration after the 1985 earthquake, factors making Mexico City less attractive have included rising housing prices, the increasing cost of living, and quality of life considerations (Brambila Paz, 1998). Indeed, one third of a sample of Mexico City residents interviewed in a migration survey conducted in 1987 (CONAPO, Encuesta Nacional de Migración en Areas Urbanas) indicated that they expected to move away from the city in the future; more than 75 percent of the residents sampled referred to problems related to metropolitan life, such as delinquency, stress, and air pollution. Of even greater importance is the fact that more dynamic growth has occurred elsewhere. Indeed, the rapid economic growth of Mexico's border states—which accounted for 62 percent of national job growth from 1985 to 1990 and "without which national economic growth would have been anemic" (Richardson, 1993b) is a major explanation for Mexico City's relative decline.

For purposes of analysis, the remainder of this article will focus on environmental and security issues in the world's megacities. This focus is not to ignore the fact that cities further down the urban hierarchy often have equally or even more severe service deficits and environmental problems with relatively fewer resources available to tackle the problems. Instead it is done to narrow and simplify the analysis

Regional Overview

There is a great diversity of experience among the world's megacities. Broad differences in patterns of megacity growth persist among the major geographical regions. In Latin America, 78 percent of the population lived in urban areas in 1995 (a proportion comparable to that of the developed countries). The rate of population growth of most major cities in the region peaked during the 1960s, when fertility levels were still relatively high and governments in the region were pursuing policies of import-substituting industrialization that drew large numbers of migrants to the cities.

In recent years, a dramatic and unanticipated slowdown in the growth of megacities in the Latin American region surprised even local observers. Whereas a process of intra-metropolitan employment dispersal has been taking place for a number of years in such cities as Buenos Aires, São Paulo, and Mexico City, the scale has increased greatly. Manufacturing plants have been moving much greater distances and often beyond metropolitan boundaries within a 200 km radius from the central core of São Paulo for example (Gilbert 1993). In addition, profound changes have taken place over the past decade in Buenos Aires, Mexico City, Rio de Janeiro, São Paulo, and other large Latin American cities as a result of economic recession and structural adjustment programs.

Despite its relatively low level of urbanization (34.6 percent in 1995), Asia accounts for 46 percent of world urban population. Amounting to 1.2 billion persons, this number is higher than the current urban population of the developed world (Chen, Valente, and Zlotnick, 1998). In the future, a majority of the world's megacities will be located in Asia. Indeed, in 2015 Asia will be home to 18 megacities, increasing its share from 50 percent in 1995 to 69 percent (United Nations, 1998b). Many megacities in Asia have experienced dramatic economic growth in recent years. Seoul, with a gross domestic product (GDP) of US $93 billion in 1990—the twelfth highest in the world (Prud'homme, 1994)—is rapidly moving away

from "developing" country status. Until the Asian economic crisis in 1998, Bangkok and Jakarta had booming economies. In the Southeast Asian countries as a whole, urbanization has been penetrating deep into the countryside, resulting in extended and dispersed mega-urban regions encompassing hinterlands as far as 100 km from the central core (McGee, 1995).

In recent years, China's megacities have been growing at very rapid rates, although this growth is partly due to reclassification. Goldstein (1993) cautions that the meaning of "urban" in China is now far different from the generally accepted meaning of that term. The use of official urban and migration statistics to measure levels of and changes in urbanization can be seriously misleading. Moreover, the experience of China's megacities has been fairly unique. Urban migration over the past several decades has been closely related to political swings, economic changes, and related policy shifts.

The megacities of the Indian subcontinent (e.g. Bangalore, Bombay, Calcutta, Delhi, Hyderabad, and Madras in India; Karachi and Lahore in Pakistan; and Dhaka in Bangladesh) have followed a different pattern. More similar to the African experience, urban growth is fueled less by economic dynamism than by rural poverty and continuing high fertility. Many megacities on the subcontinent have fairly stagnant economies, yet they will have to absorb huge population increments over the next several decades. Bombay, where at least half the population does not have access to adequate shelter, is projected to have a population of 26.2 million in 2015. Karachi, a city experiencing continuing political unrest, is projected to have a population of 19.4 million inhabitants. Dhaka, one of the poorest cities in the world where the average annual income for slum dwellers currently is around US $150, is projected to have a population of 19.5 million in 2015 (United Nations, 1998b).

Fueled by continuing out-migration from impoverished rural areas and by very high natural increase, despite years of sustained recession, cities in Africa are growing very rapidly. At nearly twice the world average, this growth puts incredible pressure on already strained economies. Whereas much of the academic literature stresses the strong link between economic development and urbanization, the relationship between the two is much weaker in Africa than elsewhere in the developing world. Many countries in the region experienced negative rates of gross national product (GNP) growth in the last two decades, whereas others grew very slowly. Yet, almost all countries in the region exhibited high urban growth rates, including those with negative GNP growth. The two megacities in sub-Saharan Africa, Lagos, and Kinshasa, are among the world's poorest yet most rapidly growing megacities and are expected to continue to grow at a similar pace over the next two decades.

Patterns of Intrametropolitan Population Growth

Just as there are widely divergent patterns of economic development and urban growth among the major geographical regions, there are striking demographic differentials within megacities. Aggregate rates of population growth for the megacities may be quite misleading. Megacities are spatially very extensive, with sizes ranging from the traditional core city of 100-200 sq. km to regions of 2,000-10,000 sq. km and more (Hamer, 1994).

Population growth in large cities usually does not increase the population density of high-density areas, but promotes densification of less developed areas and expansion at the urban fringe. In particular, population densities in the central core frequently decline as households are displaced by the expansion of other activities. As Ingram (1998) notes, this finding is very robust in both industrial and developing countries and has been observed in cities as diverse as Bangkok, Bogotá, Mexico City, Shanghai, and Tokyo. Whereas the traditional urban cores of many megacities are experiencing very slow or negative population growth, areas on the periphery typically are experiencing rapid growth. For example, the city of São Paulo grew by one percent per annum during 1980-1991. The central core as well as the interior and intermediate rings lost population (at rates of -1.3, -0.9, and -0.4 percent per annum, respectively). The exterior ring grew by only 0.4 percent per annum while the periphery expanded by 3 percent (Rolnik, Kowarik, and Somekh, 1990).

In many megacities, periurban areas have grown or are continuing to grow at staggering rates, making it impossible to provide services. In São Paulo, for example, the growth of the peripheral ring was nearly 13 percent per annum during 1960-1970, declining to 7.4 percent during 1970-1980 and to 3.8 percent during 1980-1987. It is not uncommon for peripheral areas of megacities to be growing by rates of 10-20 percent per annum. However, because of the rapidity of growth in these newly developing areas, sometimes as a result of sudden land invasions, the magnitude of this growth is unrecorded.

Such rapid population growth in periurban areas has serious implications for infrastructure provision and land markets. A major reason why local administrations in many developing country cities have not coped successfully with urban population growth is that they simply do not know what is going on in their local land markets. Most megacities lack sufficient, accurate, and current data on patterns of land conversion, infrastructure deployment patterns, and land subdivision patterns. Frequently, urban maps are 20 to 30 years old and lack any description of entire sections of cities, and particularly of the burgeoning periurban areas (Dowall, 1995). Clearly, the typical ten-year census interval is a problem in the analysis of megacities, as the metropolitan population might easily grow by more than two million within a five-year period (Richardson, 1993a).

The Components of Megacity Growth

Even if all in-migration to the megacities were somehow to cease, cities will have to absorb huge population increments as a result of natural increase. This point is often lost in the popular literature. In many megacities, natural increase is and will continue to be the most important factor explaining population growth. At the world level, net migration from rural to urban areas accounts for less than half of the population growth of cities. Around 60 percent of urban growth is due to

the excess of urban fertility over urban mortality.

A study of the components of urban growth prepared by the United Nations Population Division found that whereas internal migration and reclassification was the source of 64 percent of urban growth in developing Asia during the 1980s (around 50 percent if China is excluded), it accounted for only 25 percent of urban growth in Africa and 34 percent in Latin America (Chen, Valente, and Zlotnick, 1998). These findings have important implications for policymakers and planners. In regions characterized by economic stagnation, where rates of rural out-migration have declined over the past decade, such as Africa and Latin America, the contribution of natural increase has been strengthened. Consequently, if the growth of urban areas is to be significantly reduced, more emphasis needs to be given to the reduction of fertility.

Interestingly, for all of the theorizing about the linkages between urbanization and fertility decline over the past several decades, detailed work in this area has been quite sketchy. Using Demographic and Health Survey (DHS) data collected between 1987 and 1993 in 14 African countries, recent research on fertility behavior in African cities has found that high levels of female in-migration have reduced total fertility rates in African cities by about one birth per woman (Brockerhoff, 1996). This influence of migration on fertility appears consistent throughout sub-Saharan Africa, suggesting that migration to cities may be promoting national fertility transitions in Africa. This situation is all the more ironic since most African governments currently are quite serious about reducing aggregate rates of population growth. Yet they are quite insistent on curbing the growth of metropolitan areas, mainly by retaining population in the countryside.

In a sense, the richness of this research highlights how little has been known up to now about the complex factors involved in recent urban fertility behavior in developing countries. Factors such as the volume and permanence of migration, the effects of age structure, spousal separation, exposure to modern ideas, and the changing opportunity costs of childbearing remain understudied. Despite the widespread acknowledgment 20 years ago that family planning was one of the most cost effective means of reducing urban growth, virtually no work has been done on family planning use and needs among the urban poor. Indeed, from a policy perspective, the limited knowledge of the linkages between rural-urban migration and, in particular, contraceptive behavior has hampered the efforts of policymakers and program workers to design and implement effective family planning programs which might have a significant impact on reducing urban growth (Brockerhoff, 1996).

Attempts to Control Megacity Growth

While a considerable knowledge gap remains regarding the complexity and future implications of demographic change in the world's megacities, there is a generally accepted body of ideas in the policy arena for controlling megacity growth. For example, the anti-urban bias finally appears to have dissipated. It is now widely acknowledged that cities are, in general, productive places that make more than a proportionate contribution to economic growth. In retrospect, it is perhaps astonishing that the antiurban bias of planners, some scholars, and government officials has continued for so long despite apparent grounds for discrediting it. For years, planners made futile attempts to "contain" urban growth on the assumption that rural to urban migration could be stopped or slowed down and that people could be relocated from the existing urban areas. These views no longer are accepted widely, except perhaps in Africa.

Early attempts to "contain" megacity growth ranged from the "closed city" policies of Jakarta (1970) and Manila (1960s), which were notorious failures, to China's household registration system. It was long assumed that direct controls on residential mobility had little chance of success, except perhaps in a collectivist society such as China; even this turned out not to be the case. Despite decades of restrictions, China's "floating population" in its largest cities now numbers in the millions.

A number of developing countries have devoted considerable efforts to devising strategies to reduce metropolitan growth, primarily by fostering the growth of secondary cities and promoting regional development. Mexico is a prime example. Since the early 1970s, Mexico has had one elaborate plan after another—typically a new one in each six-year presidential term of office. It is generally acknowledged, however, that these plans have had minimal impact on influencing Mexico's patterns of spatial distribution (Brambila Paz, 1998).

The great paradox is that profound changes have occurred in patterns of spatial distribution in Mexico and in other developing countries. Yet regional policy is considered to have contributed very little to it. Indeed, as Gilbert (1993) notes, deconcentration has occurred in practice when regional planning has been at its weakest, with few governments in heavily indebted developing countries having any funds to invest in infrastructure in the poorer regions, or to offer incentives to industrialists to locate to the periphery.

It is now widely acknowledged that it is counterproductive to talk about how to "control" the growth of megacities, whether through coercive measures or channeling growth to secondary cities. Moreover, despite the rhetoric which still abounds, megacity size per se is not a critical policy variable. Since the 1980s, there has been a remarkable shift of research attention from the demography of cities to the polity of cities, with particular focus on issues of urban management and, in the 1990s, urban governance (Stren, 1995). With respect to management, a virtual consensus has emerged among urban scholars that the costs and benefits of cities are not merely a product of population size (hence growth), but are primarily a consequence of the commitment and capabilities of municipal governments to implement policies that improve population welfare. The assumption that good management overcomes population constraints of cities would appear tenable based on recent history. Many cities of the world, for instance those of recent origin in sub-Saharan Africa, are too big relative to their managerial capacities. Yet some of these "oversized" cities are quite small, e.g., in the range of 100,000 to 200,000 inhabitants (Brockerhoff and Brennan, 1998). Similarly, many

megacities—Tokyo is cited most often—are seemingly well managed and, therefore, not too large.

Environmental Issues

Megacities throughout the developing world are experiencing tremendous environmental stress. Quantification of the extent of pollution in specific megacities is difficult, because monitoring stations are rare or non-existent. Nevertheless, it is widely recognized that environmental degradation in many of the world's megacities is becoming worse. Given this fact, it is ironic that the greatest attention—even at international fora such as UNCED (the United Nations Conference on Environment and Development, Rio de Janeiro, 1992)—has been paid to issues of managing the "global commons" rather than to the critical "brown issues," such as polluted air, filthy water, and inadequate sanitation that affect hundreds of millions of the world's urban inhabitants. It is even more ironic that this distortion is sometimes reproduced within developing countries. Some national environmental groups become active in saving endangered species, but give little attention to the acute public health hazards and problems of environmental pollution facing their own citizens (Hardoy and Satterthwaite, 1989).

The sheer magnitude of population growth is an important variable affecting urban environmental problems because it directly affects the spatial concentration of people, industry, commerce, vehicles, energy consumption, water use, waste generation, and other environmental stresses (Bartone, Bernstein, and Leitmann, 1992). The environmental impact of city size is generally considered negative. The larger the city, it is assumed, the greater the per capita environmental costs or damages. However, as Prud'homme (1994) cautions, a number of caveats are in order. Since what ultimately counts is not so much pollution discharged, but rather pollution discharged minus pollution eliminated, it is important to note that for a number of pollutants (e.g. solid waste, water pollution), there are economies of scale in pollution abatement. Also, large cities are generally resource-saving relative to smaller cities; they are usually denser; they lend themselves better to public transportation usage and include a larger share of apartment buildings, hence they consume less land and less energy per capita. Finally, because transportation flows increase with population dispersion, environmental damages associated with transportation presumably could be reduced by increased concentration in a few large cities. As Prud'homme concludes, the relationships between city size, or city size distributions on the one hand, and environmental damages on the other hand, are numerous, complex, and very poorly known (1994).

There is not necessarily a strong direct linkage between the rate of urban growth and environmental problems. As noted, over the past several decades, the growth rates of many of the world's megacities have slowed considerably. Yet urban environmental problems clearly have worsened. One central problem is that economic development exacerbates many environmental problems (e.g. solid waste, automotive pollution) because the quantity of urban wastes generated per capita also tends to increase steadily with increased per capita income. Overall, the relationships between urbanization and environmental degradation are very complex, involving interactions with the natural and the built environment, as well as various economic, political, and social factors. The regional ecosystem in which a megacity is located, for example, is often a critical determinant of the severity of environmental conditions as well as the complexity of potential intervention strategies (Bartone, Bernstein, and Leitmann, 1992).

Contamination of water supplies in megacities of the developing world comes from many sources: discharge of untreated industrial wastes into watercourses; leaching of liquids from industrial or municipal waste dumps into surface or ground water; inadequate treatment of municipal sewage; and hazardous and toxic materials flushed into watercourses during storms because of poor solid waste management. Most developing countries do not have the resources either to detect many modern chemicals or to establish facilities or sites to treat hazardous wastes (Kalbermatten and Middleton, 1991). However, the impact of fecal contamination of water resources is one of the most crucial water quality issues. In highly industrialized countries, the transition from traditional to modern types of environmental pollution took place over one hundred years or more. The developing countries are faced increasingly with situations where more advanced pollution issues appear before control over traditional pollution sources has been successfully achieved (Bartone, 1989). In effect, residents of the developing world's megacities have the worst of both the traditional and modern world, with a wide spectrum of pollution problems, ranging from human excreta to hazardous manmade chemicals.

Most rivers and canals in developing country megacities are literally large open sewers, with the organic wastes from industries, drains, sewers, and urban runoff rapidly depleting the dissolved oxygen. In many Asian cities, rivers flow into the cities already laden with nutrients (nitrogen and phosphorus), pathogens, sediment, and pesticide residues from the watershed. In flowing through the city, water becomes increasingly polluted with sewage, industrial effluents, and in some cases solid waste. In Delhi, for example, the coliform count (mostly from fecal contamination) is 7,500 per 100 ml when the Yamuna River enters Delhi, and a stunning 24 million per 100 ml when the Yamuna leaves the city. That stretch of the Yamuna also receives about 20 million liters of industrial effluents, including 500,000 liters of DDT wastes per day (Hardoy, Mitlin, and Satterthwaite, 1992).

Sanitation is a major problem affecting water quality. As cities become more densely populated, the per-household volumes of wastewater exceed the infiltration capacity of local soils and require greater drainage capacity and the introduction of sewer systems. Most municipally provided sanitation systems are based on conventional sewer systems. Coverage is generally poor, with the proportion of the metropolitan population served by piped sewerage being less than 20 percent in Dhaka, Karachi, and Manila, 30 percent in Delhi, 40 percent in Jakarta, and 45 percent in Calcutta (Brennan, 1993). Sewers are generally in poor condition, and sewage treatment plants discharge effluents

that are little better than raw sewage. Because sanitation is a service that depends for its effectiveness on a high level of consistent and reliable coverage, providing service only to a select minority, or service that is intermittent, does not produce the anticipated public health and environmental benefits (Kalbermatten and Middleton, 1991).

Megacities are being inundated in their own wastes as a result of inadequate waste management policies and practices. Uncontrolled, unsegregated dumping of municipal solid waste, hazardous/industrial wastes, and clinical/medical wastes at the same sites in periurban areas and near squatter settlements increases the risk of injury and exposure to other health hazards. In most megacities in developing countries, solid waste management costs consume from 20 to 50 percent of local government expenditures (Cointreau-Levine, 1994). Only 50 to 70 percent of urban residents receive services, however, and most disposal is by unsafe open dumping.

Throughout the developing world, the problem of air pollution arises from the fact that emissions from vehicles, industrial boilers, and domestic heating sources exceed the capacity of cities' natural ventilation systems to disperse and dilute these emissions to nonharmful exposure levels (Bartone, 1989). Of the major sources of air pollution in the world's megacities, sulfur dioxide comes chiefly from emissions from oil burned in power generation and industrial plants; suspended particulate matter comes mainly from domestic fires, power, and industrial plants; carbon monoxide and nitrogen dioxide come mainly from the gasoline fumes of motor vehicles; and ozone is formed by the action of sunlight on the smog from vehicle emissions (WHO and UNEP, 1992). Ambient lead is almost exclusively generated by motor vehicles burning leaded gasoline, except in China, where it also originates from the very large amounts of coal that are burned.

Automotive air pollution in the developing countries is largely an urban phenomenon confined to the very large cities. In many megacities, atmospheric pollutants commonly associated with motor vehicles often exceed World Health Organization guidelines (WHO and UNEP, 1992). WHO recommends, for example, that human beings should not be exposed to ozone concentrations of >0.1ppm for more than one hour per year and that ozone levels not be exceeded for more than 30 days per year. The population of Mexico City (which has half of Mexico's total vehicle fleet) was exposed to more than 1,400 hours of high ozone concentrations during 145 days in 1991 (Pendakur, 1992). The situation was equally bad in two other Latin American megacities, São Paulo (which has a quarter of Brazil's vehicle fleet) and Santiago. Although the Asian cities do reasonably well in terms of ozone levels, many of them greatly exceed WHO standards for suspended particulate matter and sulfur dioxide; five cities exceeded these thresholds in 1991: Bombay, 100 days; Beijing, 272 days; Jakarta, 173 days; Calcutta, 268 days; and Delhi, 294 days (Pendakur, 1992). The situation is also quite serious in Lagos, Cairo, and Teheran (Faiz, 1992).

Although automotive lead emissions have declined sharply in most developed countries, they are generally rising in the developing countries. Moreover, shares of automotive sulfur dioxide, and particulate and lead emissions are likely to be significantly higher in the future because of the high rate of motorization in many of the world's megacities, the more extensive use of diesel-powered vehicles, and the poorer quality of automotive fuel (Faiz, 1992).

Environmental Impacts on Health

Having briefly examined a number of macro environmental problems (e.g. water and air pollution citywide), it is important to address the issue of environmental impacts on the health of megacity residents. Compared to the complex linkages among the environment, city size, and rates of urban growth, the linkages between environmental degradation and health are more straightforward. In most cases, the poorer residents of the world's megacities bear the human costs of the most debilitating impacts of environmental degradation. In many megacities, environmental pollution affects the poor more severely in part because many of them live at the periphery where manufacturing, processing, and distilling plants are often built. The periphery is also where environmental protection is frequently the weakest.

In recent years, there has been a growing body of literature on the linkages among the urban environment, poverty, and health. A 1992 review, for example, identified over one hundred studies concerned with relative environmental health impacts of urbanization (Bradley, Stephens, Harpham, and Cairncross, 1992). A notable aspect of many of these studies is the focus on differentials in health status or mortality rates between various population groups within cities. Not surprisingly, many of the studies found conditions in poorer areas of cities to be much worse than in the more affluent areas or even than the city average. Infant mortality rates in poorer areas, for example, were often four or more times higher than in more affluent areas, with much larger differentials apparent in the poorest district as compared to the most affluent district. Large differentials between rich and poor districts were also common in the incidence of many environmentally related diseases (e.g. tuberculosis and typhoid [Satterthwaite, 1993]).

Whereas a majority of the studies to date on environment and health have focused on infant mortality, only a few systematic studies examine urban chronic disease or adult health (this is true of developing countries generally and is not confined to urban groups). Indeed, as Stephens (1994: 9) notes, "when one opens the Pandora's box of adult as well as child health in cities, the linkages of urban environment, poverty, and health become overwhelmingly complex; the physical conditions of urban poverty seem to act with economic circumstances to compound threats to health." Evidence suggests that, internationally and at the city level, the complexity of urban poverty and its health consequences have not been taken seriously enough either in our analyses or agenda setting (Cohen, 1992). This is perhaps linked to a continued search for single solutions to an increasingly complex problem: "it could be argued that tackling the sanitary health of the urban populations in developing countries today is, in the long term, the least of our challenges; history tells us that the insults of urban poverty

do not go away with such interventions" (Stephens, 1994: 21).

Psychosocial Health

Psychosocial diseases and trauma (e.g. violence in young adults, depression, drug and alcohol abuse, suicide, and interpersonal violence, including child and spousal abuse) have received increasing attention from researchers and policymakers in recent years. As in the case of physical health, there is a growing literature on differentials in mental health within cities which has found a higher prevalence of mental illness in low income, physically deteriorated areas in a wide variety of settings (Bradley et. al., 1992). As Stephens (1994) notes, the complex roots of psychosocial disease in urban environments are deep within the poverty-environment nexus and are common to the poor of both developed and developing countries. However, the precise linkages between different elements of the physical environment and psychosocial disorder or disease are difficult to ascertain and to separate from other variables. Moreover, care must be taken not to overstate the effects of environmental factors on psychosocial health when more fundamental social, economic, and political factors (such as low and very unstable incomes and oppression or discrimination), underlie psychosocial disorders (Satterthwaite, 1993).

Trauma and particularly violence are increasing problems of the social environment of cities that relate to psychosocial health. They are articulated as a major concern of the urban poor (and rich) in a growing number of cities. In public health terms, deaths from violence now overshadow infectious diseases as child killers in some poor urban environments (Stephens, 1994). Violence (mostly homicides), for example, now account for 86 percent of all deaths in boys aged 15-19 in São Paulo and over half of all deaths in 5-14 year olds (SEMPLA, 1992).

> São Paulo has tackled its less complicated urban poverty questions—its basic infrastructure questions—with comparative success. But the urban poverty has not gone away; education and income differentials still exist in severity, with a seven-fold differential existing between best and worst zones. This is perhaps reflected in the health data—infectious diseases have gone largely from the favelas of São Paulo, but they have been replaced ferociously by an epidemic of violence—rates of mortality are the second highest internationally (after the US) and it appears that the children saved from sanitary diseases have grown up to kill each other (Stephens, 1994: 15).

Crime and Security

Crime and public security in the world's large cities have been receiving increasing attention from many quarters in recent years. Crime challenges the very foundations of the social order, takes a heavy toll in terms of human suffering, and results in economic waste and a general deterioration in the quality of life.

In recent years, massive public protests and riots in cities such as Delhi, Jakarta, Karachi, and a number of African cities, have resulted in significant loss of life and widespread destruction of property. These disturbances have at times been triggered by immediate economic circumstances (e.g. rising food prices, food scarcity, currency devaluation) or by political upheavals. In some cases, simmering ethnic and communal tensions (e.g. between Hindus and Sikhs in Delhi, Mohajirs and Pathans in Karachi, and Indonesians and ethnic Chinese in Jakarta) have come to the surface during such episodes, resulting in an even higher toll of death and destruction. Such episodes of citywide violence have serious potential for destabilizing worldwide financial markets and destroying infrastructure, thereby impacting already fragile national economies, or igniting violence in entire geographical regions.

Worldwide, however, urban crime is dominated by crimes against property (e.g. theft, burglary, car hijacking), which account for at least half of all offenses in the world's cities (United Nations Centre for Human Settlements, 1996). During the early 1990s, 61 percent of the population in urban areas of over 100,000 inhabitants at world level were victims of crime over a five-year period; in the developing regions, 68 percent of the urban population in Latin America, 44 percent in Asia and 76 percent in Africa were crime victims. Violent crime, including murder, assault, rape and sexual abuse, and domestic violence, now accounts for 25 to 30 percent of offenses in cities in developing countries. One notable aspect of violent crime is the increase in murders. In several of the world's largest cities, including Los Angeles, Rio de Janeiro, Bogotá, and São Paulo, more than 2,000 people are murdered each year. In Rio de Janeiro, more than 6,000 people were murdered in 1990 alone, resulting in a murder rate of 60 per 100,000 inhabitants; as a point of comparison, the murder rate in Washington, D.C. was over 70 per 100,000 in the early 1990s (United Nations Centre for Human Settlements, 1996).

The increase in crime has generated a feeling of insecurity, transforming the spatial forms of many cities. The result has often been the geographical and social segregation of the wealthy from the poor. In some cities, insecurity and fear are changing the city's landscape and patterns of daily life, including people's movements and the use of public transport, sometimes discouraging people from using the streets and public spaces altogether (United Nations Centre for Human Settlements, 1996). In many of the world's megacities, the poor are the main victims of urban violence, including crimes against property and violent crimes such as rape or assault. The poor cannot afford burglar alarms and other protection devices and have no access to private security services. At the same time, these services are becoming a burgeoning worldwide industry: as of the mid-1980s, there were 127 security companies in operation in Bogotá (with five times more privately paid guards than regular policemen) and 80 security firms in Nairobi; likewise, 94 percent of automobiles in Bangkok were fitted with security devices (Buendia, 1989).

Urban crime and violence in the world's large cities is generally not a spontaneous occurrence, but rather the product of inequality and social exclusion. Although rapid urbanization

and poverty partly explain the scale and extent of urban violence and crime, other factors such as the political and economic climate, local traditions and values, and the degree of social cohesion and solidarity among urban communities also play a role. Erosion of moral values and the collapse of social structure and institutions, such as the family or the neighborhood, put communities more at risk of urban violence and crime (Habitat Debate, 1998).

Urban violence is also deeply embedded in the specific local context. Among the world's large cities, there are sharply different degrees of social welfare development and income distribution patterns, contrasting demographic patterns (e.g. in terms of population growth, internal and international migration flows, age structure), varying cultural factors (e.g. religion, ethnicity), and differing paces of cultural change.

There is considerable debate about the relative importance of different factors. Many specialists stress the significance of inadequate incomes. These disparities are usually combined with very poor and overcrowded housing and living conditions, and often insecure tenure. Together the situation presents fertile ground for the development of violence (United Nations Centre for Human Settlements, 1996). Other explanations focus on the contemporary urban environment, particularly the ostentatious display of wealth and luxury goods in certain areas. These displays engender an attitude that legitimizes the "distribution of wealth" through criminal activity (United Nations Centre for Human Settlements, 1996). Indeed, in a simple "Robin Hood" model of income redistribution developed by a World Bank economist, inequality variables seem to play a significant role, particularly in the case of property crimes (Bourguignon 1998). Little is known about how crime varies with business cycles; a study of Lagos in the early 1980s found that fraudulent offenses appeared to occur only in times of economic prosperity, while robbery occurred during periods of both prosperity and depression. However, violent crimes tended to diminish when a new government or economic recovery signaled hope of political or social improvement and stability (Buendia, 1989).

In many cities there has been a greater susceptibility to the negative outcomes of mass culture owing to the weakening of social bonds and controls. Satellite dishes, linking individual homes to a remote outside world, are a new feature of the urban landscape in much of the developing world. The level of violence on television and in other media is thought to play a significant role in engendering violence in the United States; clearly, little is known about the future impact of exporting this material to the furthest reaches of the developing world. The easy availability of guns is a factor in some societies. In many acts of violence, such as rape, alcohol is often a stimulating factor. Another factor in the increase in murder and violent crime in many cities has been the growth in drug trafficking, which has reached unprecedented levels and has diverted considerable police personnel from other tasks. At the neighborhood level, petty drug dealing has become a relatively profitable activity in many megacities.

The Missing Link

When considering the linkages between urbanization, environment, and security, clearly, the missing link is poverty. In coming decades, increasing numbers of cities in the developing world will be extremely large, will have a high proportion of their population living in poverty, and will suffer from severe environmental degradation. The poor in these cities will suffer disproportionately from waterborne and sanitation-related diseases as well as from psychosocial diseases and violent crime. Occasionally, disease outbreaks in developing country cities will result in worldwide epidemics such as cholera. More frequently, however, poor environmental conditions will mainly affect the health and productivity of low-income megacity residents. Likewise, citywide violence will sometimes have worldwide reverberations, raising concerns for regional stability and affecting financial markets. More frequently, however, urban crime will consist of the poor preying upon the poor.

Why should these issues be addressed? The major reason is one of basic human rights. Many of the world's largest cities will house millions and millions of people living in conditions of abject poverty. Given current economic realities, the situation of most of these people is unlikely to improve substantially in coming decades. Providing minimal environmental sanitation and health care services and basic public security may be all that can be realistically provided. As the Programme of Action of the International Conference on Population and Development emphasized:

> Governments should increase the capacity and competence of city and municipal authorities…to safeguard the environment, to respond to the need of all citizens, including urban squatters, for personal safety, basic infrastructure and services, to eliminate health and social problems, including problems of drugs and criminality, and problems resulting from overcrowding and disasters, and to provide people with alternatives to living in areas prone to natural and man-made disasters. (United Nations, 1995b: 49)

A second reason for addressing these urban issues relates to globalization. In coming decades, large cities will be at the forefront of globalization and will be the principal nodes generating and mediating the flows of capital, people, trade, greenhouse gases, pollutants, diseases, and information. If both urbanization and decentralization continue in the decades ahead, cities will carry a heavy charge of responsibility for political stability, openness, economic progress, and the quality of life in many nations.

Megacities that can become and remain more competitive in international trade and investment are likely to grow in the future, whereas those than cannot are likely to stagnate or decline. This economic arena is another area where environmental issues and crime and security come into play. Growing congestion and pollution in the main urban centers make it increasingly difficult for some countries to compete for foreign direct investment. Moreover, violence and crime not

only affects tourism—frequently a major foreign exchange earner—but also adversely impacts foreign investment.

The necessity for megacities to be internationally competitive in order to sustain their economic vitality in the twenty-first century may well create new and wide economic chasms if governments in cities with lagging internal competitiveness do not improve urban conditions (Rondinelli and Vastag, 1998). Megacities that continue to grow in terms of population, but lag behind in international competitiveness and economic development may become less able to support large influxes of population or alleviate urban poverty.

It is important to emphasize that the population of the world's megacities will continue to grow over the next several decades, whether or not they become more internationally competitive—indeed, whether or not their economies grow at all (Rondinelli and Vastag, 1998). Economically lagging metropolitan areas in developing countries continue to attract migrants because the "push factors" of rural poverty make even subsistence living in poor cities a more attractive alternative. Indeed, among the megacities with the highest rates of population growth are poor cities with sluggish economies such as Cairo, Calcutta, Dhaka, Kinshasa, Lagos, and Madras.

How the world's megacities are managed in coming decades will shape patterns of national economic growth, the settlement of vast populations, and the social and political stability of many developing countries. The stakes are high. Without extraordinary efforts to develop urban economies, especially in such critical areas as infrastructure, a segregated world economy may emerge where, those megacities that have the necessary prerequisites for integration prosper, while others, fall farther and farther behind. Unless such trends are reversed, the urban landscape in many developing countries will be bleak, chaotic, and impoverished.

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To Cultivate Peace: Agriculture in a World of Conflict

by Indra de Soysa & Nils Petter Gleditsch
with Michael Gibson & Margareta Sollenberg

Abstract: In this article we examine the post–Cold War pattern of conflict with a focus on the role of agriculture. In developing countries, the primary sector of the economy is dominant. Closely linked to basic human needs, it is directly affected by environmental degradation and by violence. The agricultural sector is subject to strong governmental intervention in most countries, and can easily suffer from capricious politics. The conditions of food production and distribution is a good arena for observing the interaction of politics, economics, and environmental issues as they influence violent conflict – how it is generated, how it is escalated, how it is contained, and how it is resolved. We conclude that the rehabilitation of agriculture is a central condition for development, reducing poverty, preventing environmental destruction, and for reducing violence. Poor conditions for agriculture hold grave implications for socio-economic development and sustainable peace. We also see good governance as crucial in building healthy conditions for agriculture, and thus in breaking the vicious cycle of poverty, scarcity, and violence. The central issues are not merely technical: they relate directly to the way human beings organize their affairs and how they cope with natural and man-made crises.

Introduction

The end of the Cold War has spawned a sharp debate on the future of global security. For over forty years, world politics had been dominated by the all-encompassing conflict between two systems with claims to world hegemony. Each system was headed by a superpower and the military stand-off between them was sometimes referred to as 'the Long Peace' because of the absence of direct armed confrontation (Gaddis, 1987). In global terms, this was not a particularly peaceful period. There were some 120 wars during the Cold War. Five of these wars claimed more than one million casualties each, and a further six more than 200,000. About half of these wars—those in Korea (1950-53), Vietnam (1960-75), Afghanistan (1978-), Angola (1975-94), and Mozambique (1979-92), along with a host of smaller confrontations in Ethiopia, Nicaragua, and elsewhere were directly or indirectly related to the East-West confrontation. Indeed, it can plausibly be argued that the superpowers were fighting by proxy in the Third World (Gleditsch, 1995: 544-546). The level of casualties in these wars lie somewhere between the total casualties of the First and Second World Wars.

In the post-Cold War world, despite early expectations of a 'New World Order', armed conflict has not been abolished, although it follows a different pattern. Some have seen emerging a 'Clash of Civilizations', (Huntington, 1996), where differences between world-views, religion, and culture form the main battle-lines. Others have linked violence, particularly in the developing world, to environmental degradation and resource scarcity (Bächler et al., 1996; Homer-Dixon and Blitt, 1998). Yet others have seen violence as intimately connected to the failure of development, where violent conflict can destroy in a year what development assistance and local efforts have built in decades, and where poverty and deprivation in turn generate new conflict (Collier, 1998; Snow, 1996). Some have attributed armed conflict to dysfunctional political processes (Hegre et al., 1998; Rummel, 1995). And others have seen all of these processes at work in mutually reinforcing ways. These factors add up to create a vicious cycle of poverty, deprivation, poor governance, and violence in a 'zone of turmoil', particularly in parts of the Third World, and a virtuous cycle of prosperity, democracy, and peace in a 'zone of peace' (Singer and Wildavsky, 1993) in the North Atlantic area and smaller

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pockets elsewhere.

In this article we examine the post-Cold War pattern of conflict with a focus on the role of agriculture. The primary sector of the economy is dominant in developing countries. It is closely linked to basic human needs, and it is directly affected by environmental degradation and by violence. The agricultural sector is subject to strong governmental intervention in most countries, and can easily suffer from capricious politics. The conditions of food production and distribution is a good arena to watch the interaction of politics, economics, and environmental issues as they influence violent conflict—how it is generated, how it is escalated, how it is contained, and how it is resolved. *We conclude that the rehabilitation of agriculture is a central condition for development, reducing poverty, preventing environmental destruction—and for reducing violence.* Poor conditions for agriculture hold grave implications for socioeconomic development and sustainable peace. We see good governance as absolutely crucial in building healthy conditions for agriculture, which can help to break the vicious cycle of poverty, scarcity, and violence. The crucial issues are not merely technical, they relate directly to the way human beings organize their affairs.

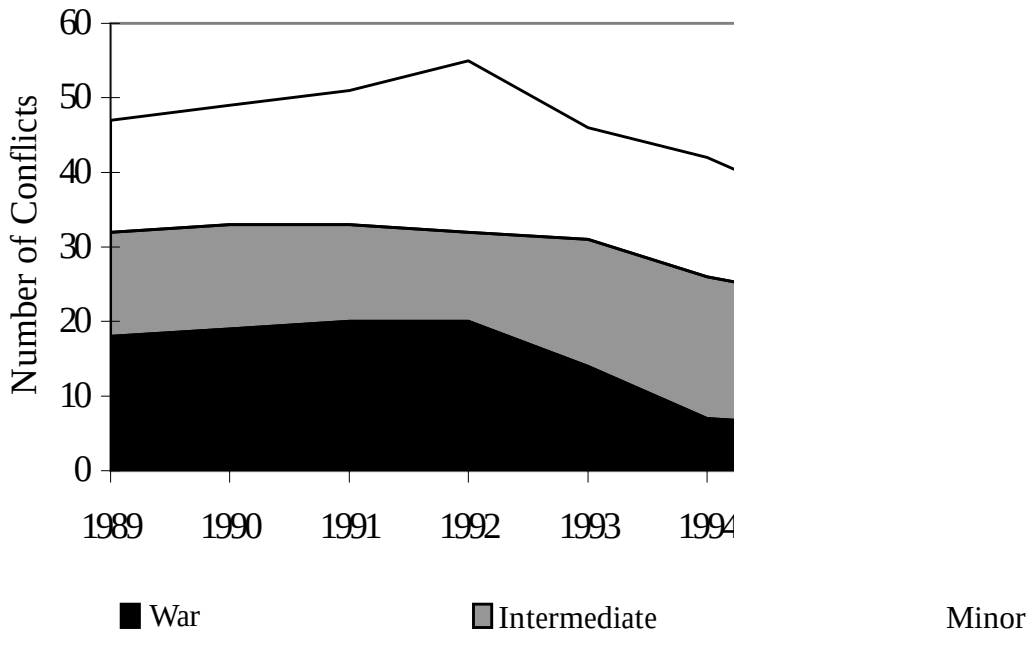
The Post-Cold War Security Environment

The end of the East-West conflict has inspired two conflicting sets of expectations regarding the future of human security. An optimistic view saw the withering of totalitarian ideology and the rejection of Mutual Assured Destruction as the basis of international security, as a window of opportunity for liberal values (Kegley, 1993). Freed from the burden of the arms race, states would be able to spend the peace dividend on the fight against poverty and environmental degradation. The third wave of democratization (Huntington, 1991) would usher in an era of good governance. Like slavery and the duel, war would increasingly be seen as an outmoded institution (Mueller, 1989). Both states and sub-national actors would realize that war does not pay and would shift to nonviolent ways of solving their differences. To the extent that the conflicting parties themselves did not accomplish this, the United Nations and the great powers would work together to contain armed conflicts instead of competing for support among the warring factions.

The pessimists argued that the end of bloc politics and mutual deterrence would open up for a variety of old and new conflicts, which could no longer be contained by the fear of escalation to major power confrontation. Mearsheimer (1990) likened Europe to a pressure cooker with the lid taken off. Old conflicts, temporarily suppressed by the superpower confrontation, would once again come to the surface. Ethnic and religious tension would stoke the fires in many divided nations—and, indeed, most nations are divided along such lines. The gap between the rich and the poor would widen. Environmental degradation would increase and resource scarcity would be exacerbated (Homer-Dixon and Blitt, 1998). The economic, cultural, and environmental dividing lines might coalesce and promote ever-sharper conflict (Kaplan, 1994). Water scarcities would lead to 'water wars' (Starr, 1991).

A one-sided focus on a single set of events may easily reinforce either an optimistic or a pessimistic paradigm. A more balanced perspective may be gained by looking at the data on post-Cold War armed conflicts from the Uppsala University Conflict Project (Wallensteen and Sollenberg, 1998: 621-623). For the period

Figure 1. Armed Conflict by Severity and Year, 1989-97



War is defined as an armed conflict with over 1,000 battle deaths in a single year. Intermediate conflicts are those with over 1,000 battle deaths in the course of the entire conflict, and minor conflicts are those that have reached at least 25 battle deaths, but less than 1,000. Both interstate and domestic conflicts are included. (Wallensteen and Sollenberg, 1998).

1989-97 this dataset includes a total of 103 armed conflicts with at least 25 battle deaths in a single year. Forty-two of these conflicts exceeded the level of 1,000 deaths per year to qualify as wars. Figure 1 shows the development of armed conflict over the eight-year period. We see a small increase in violent conflict immediately after the end of the Cold War, peaking in 1992. Since then the incidence of armed conflict has declined steadily and it is presently at a much lower level than at the end of the Cold War.

The initial increase in armed conflict is largely due to the violence that followed the dissolution of Yugoslavia and the Soviet Union. These conflicts ostensibly supported the pessimistic predictions of Mearsheimer and Huntington. By 1993, the decline in the Cold War-related conflicts in the Third World already compensated for the revival of armed conflict in Europe, and by 1994 the number of conflicts in Europe had started to decline. While it is still too early to proclaim all of Europe a zone of peace, it is noteworthy that in 1997, no conflict in Europe exceeded 25 dead. The bulk of the armed conflicts we once again find in the Middle East, Africa, and Asia, while the Americas seem to be more peaceful than they were during the Cold War.

During 1989–97, intrastate conflicts accounted for the bulk of violence, with 88 of the 103 conflicts being purely domestic and another nine classified as 'intrastate with foreign intervention'. The number of interstate armed conflicts varied between zero and four per year during this period. Most interstate conflicts have been at relatively low levels of violence, while many of the intrastate conflicts have been quite bloody, and affect the civilian population most severely. The UNDP (1998) and World Bank (1998) estimate that as much as 90 percent of the casualties in recent conflicts have been civilian, mainly women and children.

Given the main locations of armed conflict in the post-Cold War period, it is not surprising that we find a strong link between agricultural dependence and conflict, which is depicted graphically in Figure 2. The armed conflicts of the post-Cold War years are plotted on a background of the value of agricultural production as a share of GDP.

Most of the armed conflicts, whether domestic or international, are concentrated in regions heavily dependent on agriculture, such as South Asia, Central Africa, and parts of Latin America. In countries that have a low dependence on agriculture (white on the map), we find only a handful of conflicts. Indeed, only five out of 63 states who exhibit a low dependence on agriculture have suffered armed conflict after the Cold War. Of these five, none have exceeded 1,000 battle deaths per year, and only the conflict in Northern Ireland has a cumulative death toll exceeding 1,000.

In some cases, examination of the individual conflicts reveal clear links between issues relating to agriculture and the origin of the armed conflict. In the Appendix we examine this question in some detail. In several of the conflicts in South Asia and South and Central America a call for the redistribution of land is an important part of the ideological claims of the opposition

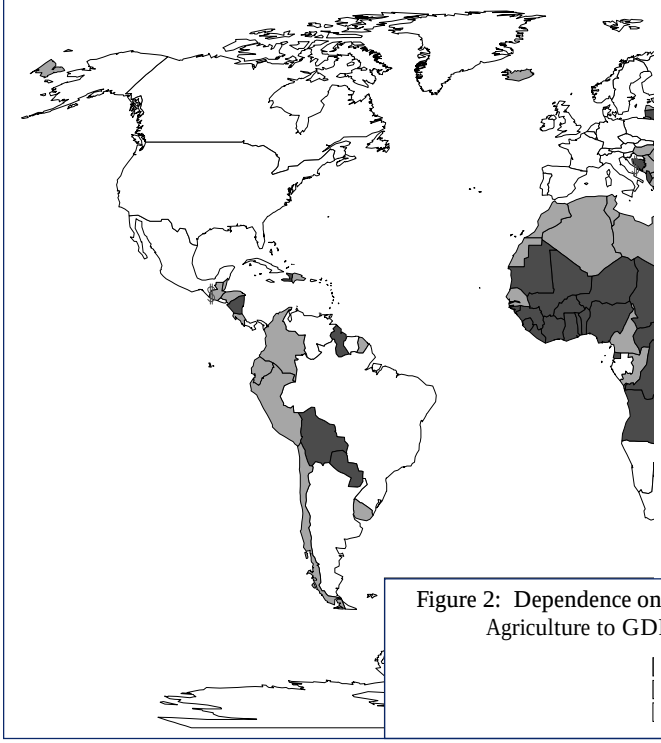


Figure 2: Dependence on Agriculture and Armed Conflicts 1989-97
Agriculture to GDP Ratio 1989 - Countries/Territories

	27.0 to 65.5 (62)
	11.3 to 27.0 (59)
	0 to 11.1 (63)

Sources: The list of conflicts are from Wallensteen and Sollenberg (1998). The agriculture to GDP ratios are from *World Resources* (WRI, 1997). Additional data is obtained from *World Fact Book* (CIA, 1997) and two data points were estimated as regional averages. Conflicts classified by Wallensteen & Sollenberg as concerning government were located at the capital, whereas territorial conflicts have been placed in the approximate area where they occurred. A red star indicates a major conflict where battle-deaths reached a threshold of 1,000 in at least one of the years 1989-97. A red flag indicates a minor conflict where battle-deaths did not reach 1,000 in any year during the 1989-97 period. The map includes interstate as well as internal armed conflicts. The vast majority of the conflicts during this period were internal.

movement. In Israel, Bangladesh, and elsewhere settlers in agricultural areas provoke violence. In the Sahel and the Middle East, among other places, environmental change, man-made environmental destruction, or wasteful resource practices have exacerbated conflicts over freshwater for irrigation, agricultural land, and other scarce resources. Food riots, a recurring phenomenon in many poor countries, although hardly ever large enough to be recognized as a full-scale war, also result in the destruction of property and occasional deaths.

Neither the statistical association presented in Figure 2, nor the impression gained from the cases described in the Appendix should lead us to conclude that there is an overall *causal* link between the heavy economic dependence on agriculture and the incidence of armed conflict. Heavy dependence on agriculture is usually associated with a 'backward' economy. We shall argue strongly in the following sections that the missing link here is *poverty*, which we understand as the lack of physical, human, and social capital. The lack of these factors generates conditions which are unfavorable for development, and hence for peace. The conflict-producing conditions that may emanate from agricultural and rural issues, such as land tenure conflicts, are manifestations of the incapacity of social and political systems to handle such crises. Moreover, capricious politics are likely to create conditions of underdevelopment such as low economic growth and simultaneously cause the extreme grievances that drive individuals and groups to take up arms.

According to some recent systematic analyses, poverty predicts the risk of civil war most strongly (Collier and Hoeffler, 1998; Hegre et al., 1998). The interconnected nature of the dependence on agriculture, socio-economic deprivation, and conflict is illustrated by Table I. Africa and South Asia in particular exhibit low per capita income, low levels of human development, high dependence on agriculture and agricultural labor, and slow mobility of per capita income given the low level of wealth—and they have also experienced a high number of severe armed conflicts since 1989. Of course, these averages do not capture the enormous variance within regions. For example, Mauritius and Botswana have comparatively high per capita incomes and growth rates within Africa, and they have been relatively peaceful. Cambodia, Myanmar, and Laos, on the other hand, are low-income countries within the East and Southeast Asian region, and these states have been conflictual. Latin America contains some of the poorest (Bolivia, Nicaragua) and richest states (Chile, Argentina) among the developing countries, with many places suffering some of the highest levels of income inequality in the world.

Stagnation, State Collapse, and Conflict Vulnerability

Such heralded studies as the Brundtland Commission's report on sustainable development (1987), the former Secretary General of the United Nations, Boutros Boutros-Ghali's (1995) *An Agenda for Development*, and recent, detailed scholarly studies of conflict (Brown, 1996; Collier, 1998) have cited poverty and deprivation as one of the primary underlying causes of endemic conflict and civil violence. Violence has also accompanied the collapse of state authority in such places as Somalia, Rwanda, Sierra Leone, Liberia, and the Republic of Congo. The collapse of states in turn is attributed primarily to the failure of existing state institutions to ensure socio-economic development and alleviate deprivation. This is especially true of states that were in the hands of dictators, who ran them with little regard for the well-being of citizens, tenuously maintaining power with the financial and political support of outsiders. In the post-Vietnam era the Cold War functioned according to the Nixon and Brezhnev doctrines that committed the two superpowers actively to fight their battles by proxy. These doctrines ensured heavy support for the various states and groups

Table I. Agriculture, Poverty, and Armed Conflict in the Post-Cold War Period, 1989–97 (Regional Averages)

Variable	Africa	Latin America	Middle East	South Asia	S & E
Agriculture/GDP ratio 1994	28.9	15.4	6.6	36.7	1
Agricultural Labor % of Total Labor 1994	73.3	36.1	32.1	70.6	3
GDP per capita in $ PPP 1994	2,207	5,498	10,778	1,723	1
Human Development Index 1994	0.427	0.757	0.799	0.467	(
Growth of GDP per capita, 1980–93	0.04	–.04	–1.2	2.6	5
Conflicts with over 1,000 battle deaths in single year, 1989–97	14	3	5	8	2

All economic data were obtained from the UNDP (1997). The agricultural labo conflict data are from Wallensteen and Sollenberg (1998).

that the superpowers favored ideologically. Armed conflicts in such places as Ethiopia, Angola, Mozambique, and Afghanistan were escalated way beyond what could have been sustained by indigenous resources, with tragic consequences for the local populations.

The end of the Cold War left many states powerless, with no tax base, little legitimacy, and no longer a monopoly over the use of force. Such states have faced an anarchical struggle for the control of power and resources along ethnic and tribal lines and based on political and socio-economic affinities (Zartman, 1995). Not all such conflicts are due solely to the lack of central authority, nor are they simply fought as tribal wars. The wars in Liberia and Sierra Leone, for example, can be viewed as emanating from subsistence crises. Indeed, many of the state failures emanate from the inability of these weak states to provide the basic needs of people. High numbers of unemployed youth in the cities and the countryside are ready combatants within various criminal insurgency groups that form to battle over the control of resources and whatever state power is left intact.

In the past, internal war has usually been discussed in terms of rebellion and insurgency, and as highly orchestrated politico-military action against the superior power of a state. Ordinary peasants became the foot soldiers of collective movements that brought together disparate, disaffected elements by the promise of a revolution of the existing political and economic order. The tactics of the insurgents were designed to capture the seat of government according to the principles of guerrilla war. As Mao's famous dictum illustrates, people are to guerrillas what water is to fish. In military terms, therefore, the center of gravity of guerrilla movements was located in the people, whose passive and active support constituted the lifeblood of these movements. Similarly, counterinsurgency strategies of governments were built on winning the hearts and minds of the populace in order to counter such threats. For these reasons, the old insurgencies were relatively moderate in terms of the level of violence against non-combatants, the level of criminality, and the degree to which general injustice against non-combatants was practiced by both sides. Of course, internal war during the Cold War was also often brutal. However, both insurgents and counterinsurgent forces in general showed themselves up to the society at large to be the most desirable side to support, which disciplined much of their actions. The violence that was perpetrated in many instances was explicitly designed to win political support at home and abroad. In fact, one of the main ways in which political entrepreneurs persuaded peasants to risk their lives for the movement was by providing selective incentives which included various acts of benevolence and justice within rural communities (see Popkin, 1979). Such wars were classically fought according to the Clausewitzian maxim of armed conflict as 'politics by other means.'

The new internal wars are quite different. Restraint in the use of violence has now given way to utter brutality, often committed on the most vulnerable of non-combatants (Carnegie Commission on Preventing Deadly Conflict, 1997; Project Ploughshares, 1997). Consider the long and bloody conflict between *Sendero Luminoso* (the Shining Path) and the Peruvian government. Although clothed in Marxist jargon and promises of economic and social emancipation for the Indian peasants of the Upper Hualaga valley, the Shining Path seems to have been motivated mainly by the desire to profit from supplying cocaine to the drug cartels in Colombia and Peru. A similar pattern of apolitical violence occurs in Colombia between various guerrilla groups and military and paramilitary forces. Ethnic cleansing in the former Yugoslavia and Rwanda claimed thousands of lives, many of whom were women and children, and the killing had only the remotest political purpose, such as the preservation of a greater Serbia or simply the elimination of ethnic opponents as in Rwanda. Moreover, willful famine that kills *en masse* has proved to be a potent weapon in Liberia, Mozambique, Somalia, and the Sudan, where segments of the population were starved wilfully. The violence in Sierra Leone and Liberia resembled gang-land warfare where youths armed with automatic weapons terrorized civilian populations and each other over the control of diamond mines and other resources that promised quick profit.

In the old insurgencies the means and methods of violence served explicitly politico-military aims, but the new internal wars are simply apolitical brutality. Many of these conflicts are the debris of the Cold War, where the surrogates of the superpowers have vanished to create a vacuum which groups that had been benefiting from shadow economies and underground activity are now vying to fill. The fighting is also intensified by the ready availability of sophisticated weaponry (Project Ploughshares, 1997: 4; Urquhart, 1996: 6). Some have even argued that the new conflicts seem to have merely an economic purpose, despite most explanations that simply rely on ethnicity, tribalism, and primordial hatreds to explain the character of new internal war (Keen, 1998).

Many of the new conflicts persist through pillage, extortion, illicit trade, labor exploitation, land grabbing, illicit resource extraction, and other criminal activities. The mafia-style criminal activities common in most states of the former Soviet Union fit this pattern, as do narco-terrorism, gun-running, and terrorism for hire by various organizations. While the underlying reasons for peasant dissatisfaction, such as the availability of land and threats to livelihood, may have carried over from the Cold War years, the new conflicts are integrally linked to conditions affecting the rural sectors.

The new conflicts may be traced to the loss of livelihood, the hopelessness of surviving at the margins, and the alternative life of crime and banditry. The bulk of the rural population seems to be non-participant victims rather than the active and passive supporters of utopian revolution. Consider, for example, the hapless situation of the Indian peasants of the Upper Hualaga Valley in Peru. Sandwiched in between the Shining Path guerrillas and the state, these peasants were forced to eke out a living supplying coca to the guerrillas, or risk the consequences of non-compliance. If they actively supported the guerrillas, they faced retribution at the hands of the state's military and para-military forces (Snow, 1996). Ironically, the foot soldiers of much of the armed violence today might just be trying to stay alive.

Conditions affecting agriculture, the main source of livelihood in the rural sector in many poor countries, and the level of poverty and deprivation are linked to armed violence in a

positive-feedback loop. While Messer et al. (1998: 21) suggest this two-way causality, they do not find a direct statistical link between indicators of food security and conflict. Nafziger & Auvinen (1997) do find a positive link between low food production per capita and complex humanitarian emergencies. Their strongest result, however, is for tradition of violent conflict. A history of conflict would have in turn affected food production and overall economic activity. We view the links between hunger and violence as emanating from the denial or loss of entitlement as both a result of and a cause of armed conflict in the poorest countries (Drèze and Sen, 1989; Keen, 1994). Unlike Sen (1981) who focuses on the issue of government intervention as a corrective to entitlement loss, we focus on the problems of urban bias and dysfunctional political processes. We believe that this framework explains why the fundamental grievances that motivate violent collective action arise from the same political processes that generate food shortages, underdevelopment, and conflict.

Agriculture and Conflict: A Theoretical Assessment

While ideology is not a salient factor in the internal wars of the post-Cold War world, the underlying causes of anomie and deprivation remain. The new internal violence that affects the rural population is linked directly to the loss of livelihood. In other words, the impetus for violent action emanates from the same source as that which determines the conditions affecting agricultural growth and economic development in general. Agriculture has been plundered by capricious political processes and policies (Schiff and Valdés, 1992). In this section we discuss armed violence emanating from the conditions affecting agriculture in a larger framework offered by theories of rent-seeking and urban bias. Following that, we examine the South Asian region with special emphasis on India, in order to flesh out the origins of rural struggles in poor developing countries. Unlike Somalia and Zaire where state failure led to mass violence, India has a functioning democratic state, which has prevented mass-scale violence and complex humanitarian emergencies.

In contrast to the modernization and dependency explanations of the causes of poverty in the developing world, the political-economy perspective offers the theory of rent-seeking that blames distorted markets and dysfunctional political processes. While dependency theory views exploitation as emanating from the outside, the rent-seeking perspective views exploitation as a result of internal processes. Rent-seeking activity of well-organized farmers in rich countries may also harm the agricultural prospects of poor countries. This factor is especially salient to the rural poor in developing states for whose labor and products the rich markets of industrialized countries are often closed. Thus, agriculture in poor countries is 'milked' because of distorted markets at home and the lack of richer markets abroad.

According to this perspective, underdevelopment occurs because of the rent-seeking activities of well-organized interests who seek excessive profits through control of the market. The governments of developing countries acquiesce in this behavior and coalesce with special interests because of mutual benefits in the political, economic, and social spheres of life. In the distributional struggles within the market, the powerful often win out because of the control of resources, greater organizational capabilities, and access to the organs of government. The rural poor are systematically exploited by urban interests because they command few resources, are often illiterate, and are poorly suited for collective action.

According to Bates (1988), the primary motive of any government is to retain power. Governments, therefore, pander to bases of support among well-organized private interests such as urbanites and the rural elite. This is especially true when it comes to the control of food prices in developing countries. Urban dwellers, a major portion of whose incomes is spent on food, prefer low food prices. Moreover, urban industries lobby for protection against imported goods by way of high tariffs on imports and exchange controls. Food prices are set artificially by para-statal marketing boards, and imported food becomes cheaper as a result of artificially inflating the value of the local currency. These measures hurt the rural sectors, squeezing the small-holder producer of food crops.

The large export-crop producers benefit from the artificially inflated local currency, which provides incentives for people to produce cash crops rather than food. This arrangement benefits the rural elite and the urban industrialists. This arrangement is also advantageous to some segments of urban dwellers, such as those who are formally employed by the state, but not for the mass of poor, whose ranks grow rapidly as impoverished small farmers and landless peasants move to the city in search of alternative occupations. The policy of artificially lowering food prices does not translate into food security for the urban poor because lower economic growth reduces the opportunity of formal employment. At the same time, the influx of rural poor to the cities lowers the overall wage rate (Krueger, Schiff, and Valdés, 1991). Thus, the artificially lowered food prices may still command a large percentage of the earnings of the masses of poor that flock to the cities.

The rural poor, who are pushed out into the cities, contribute to increased urban bias. This has grave consequences by lowering the incentives for food production, land reform, the development of agricultural infrastructure, education, and the alleviation of rural poverty. Such a policy environment leads to clientelistic politics and corruption, with governments providing sidepayments to its supporters in the form of subsidization. In general, the distortion of markets and of the political process contribute to lowering overall economic growth and perpetuating underdevelopment (Weede, 1987). This accounts for widespread dissatisfaction that cuts across the urban-rural divide and explains the incentive structure for rebellion and banditry.

Under such conditions, it is not surprising that historically the foot soldiers of rebellions against states have been landless peasants and their poor cousins recently moved to the urban slums. Moreover, rent-seeking and urban bias have implications for violence through the creation of patrimonial politics, patronage, and the destruction of social capital. Clientelism creates vertical ties of dependency between patron and clients at the expense of horizontal ties of association, which are the foundations of the effectiveness of government and the level of satisfaction with government performance (Knack and Keefer,

1997; Putnam, 1993; World Bank, 1997). The role of social capital in the political and economic development process is generally neglected by those who study conflict, even in studies which place a great deal of emphasis on the notion of good governance as a precondition for peace and prosperity (Carnegie Commission on Preventing and Deadly Conflict, 1997).

In what specific ways do poverty and rural vulnerability translate into violent collective action? Underdevelopment, the loss of livelihood, and food shortages lead to the loss of a major component of a poor person's entitlement set. For the many landless peasants, the food entitlement depends upon their ability to exchange labor for wages, which in turn is highly dependent upon the conditions affecting agriculture. If biases emanating from natural conditions or political factors adversely affect agricultural production, then entitlement failure is highly likely among the rural and urban poor.

In the 'bottom-up' violence that we are witnessing in many parts of Africa, armed bands defy authority and live off the land through violent expropriation (Keen, 1998). The ready availability of automatic weapons fuels the appalling nature and level of violence. The problems associated with the rural sectors can, therefore, have severe repercussions, whereby large segments of the rural youth easily become the perpetrators and victims of mass violence. As Keen (1998: 45) puts it, for many of the unemployed youth, 'it may … be more dangerous to stay out of an armed band than to join one.' The perpetuation of violence in impoverished areas is intimately related to the problem of ensuring food.

In states which have collapsed or are teetering on the edge, such conflicts resemble the form of collective violence most common in pre-industrial times—rational responses to subsistence crises. Subsistence crises gave rise to mass violence in pre-industrial times when natural or political processes created food shortages. Social banditry or criminal rebellion, what Hobsbawm (1959) refers to as 'robinhoodism', occurred as rational responses to extreme and prolonged hardship and other shocks affecting the supply of food. Such times provide a set of limited options for those affected, as exemplified by a study of collective violence during the Ming dynasty in Imperial China (Tong, 1988). The options for individuals facing extreme hardship were limited to migration, joining religious orders if accepted, becoming eunuchs, pawning family members, prostitution, resorting to cannibalism, or becoming bandits and rebels (Tong, 1988: 110–117).

In other words, faced with deprivation and even death from starvation, people resorted to extreme coping strategies. The decision to resort to banditry and criminal rebellion, however, depended on the severity of sanctions—usually death by quartering or decapitation, or even the decapitation of the entire family or the entire village, depending on the severity of the crime—and the uncertainty of these sanctions. In China, banditry was most pronounced in areas where the likelihood of surviving hardship was at a minimum and the probability of finding refuge from sanctions at a maximum.

Recent work by Collier (1998) delineates some ways in which poverty is responsible for rebellious action. The opportunity cost of rebellion at the individual level is a function of grievance and employment and the spoils of war (measured as taxable income) if the rebellion is successful. Thus, the expected utility of war is a function of the level of per capita income, where low income reduces the opportunity cost of rebellion, and the government's capacity to effectively defend itself. Collier shows that the economic variables have far more predictive capability than the social variables measuring ethnic and religious fractionalization and measures of inequality. These results do not support relative deprivation arguments, although he does find some support for the grievance hypothesis whereby democracy defuses the conflict proneness of ethnically fragmented societies.

Violence may also be generated by the logic of preemption and spiraling. The foreknowledge of imminent hardship, especially severe food shortfalls, could provoke violence when one party seizes the limited supplies of others. This may take place along ethnic lines. In such instances, the space for negotiation is highly circumscribed as in the case most recently of ethnic riots in Indonesia and Lesotho. In these instances, ethnically distinct groups disproportionately represented in the commercial sector were targeted by the 'leveling crowd' (Tambiah, 1996). Any event can trigger rioting based on the underlying insecurities faced by some of the poorest sections of the population. Often, the crowds target both public and private wealth with little regard for the ethnic composition of ownership. The logic of preemption can be observed in the ethnic slaughter that rapidly spread from urban to rural areas in Rwanda in 1994.

The degree of cooperation and trust among individuals and groups—the social capital—are functions of self-interested pursuit of objectives and as repeated games of reciprocity, as seen most clearly in a stable marriage. Shirking and defection are less likely if people are involved in such games of reciprocity. Memories of earlier instances of the breakdown of cooperation, which resulted in mass suffering through genocide or willful famine, is likely to trigger similar desperate actions in the future. Collective memory mitigates collective action problems (Kahl, 1997). The logic is that 'if I don't do it, the other side will.' In this way, societal tension spirals and violence becomes endemic. The events in Rwanda in 1994 and the Sudan since the late 1980s bear this out.

Conclusions and Policy Recommendations

We have examined the links between the conditions affecting agriculture and the rural sectors and violent armed conflict. We have also critically discussed some important theories of conflict, suggesting that the new internal wars since the break up of the Soviet Union are devoid of the ideological overlay and do not fit the pattern of the old revolutionary insurgencies. The new internal wars, extremely bloody in terms of civilian casualties, reflect subsistence crises and are largely apolitical. These crises clearly stem from the failure of development, the loss of livelihood, and the collapse of states. We have placed agriculture and the role of the rural sector at the center of the development failure of states, and thus of the socio-economic and political crises that lead to violent conflict. The role of agriculture in this process is especially important given that it supplies the bulk of livelihood for people in poor

developing countries.

The negative impact of warfare on food production is hardly controversial. Indeed, the food dividend from peace can be formidable, especially for those societies suffering severe shortages and are vulnerable to conflict (Messer et al., 1998). We have emphasized the links between conflict and agriculture, focusing particularly on how conflict is generated by subsistence crises, in many respects the genesis of the vicious cycle. Building peace and prosperity clearly requires greater attention to the role of agriculture in creating livelihood, alleviating poverty, and breaking the cycle of violent conflict and scarcity.

The causes of armed conflict are likely to be perpetuated by conflict itself. People fight over vital necessities such as food; to protect a livelihood, economic, and political injustice; and to obtain safety from violence and want. States that provide such necessities also create conditions conducive to peace and prosperity, they gain legitimacy, and they strengthen societal bonds that are crucial for socio-economic and political stability. These factors create conditions amenable for democratic governance, space for civil society, and the development of a civic culture, or what UNESCO (1996) refers to as a culture of peace. Western Europe has evolved into an elaborate security community (Adler and Barnett, 1998) despite a long history of warfare, including two 'world wars' in this century. The rapid recovery of much of East and Southeast Asia from post-war destitution to economic prominence demonstrates that building prosperity and peace is also possible in other areas. Agricultural development and the creation of an abundance of food were crucial in this process.

European recovery and East Asian growth were supported by massive financial, technological, and moral aid in industry, in agriculture, and in the political sphere. Given the collapse of the Soviet model and of the ideological appeal of autarky, the required cooperation between the North and South—and among government, business, and other organizations—is likely to come easier. But the response from those in a privileged position has been lukewarm at best. Since the end of the Cold War, the wealthy states have cut back on aid (UNDP, 1998), have taken protectionist measures against imports from poor countries (Burtless et al., 1998), and have failed to provide adequate relief to war-torn societies. This lack of enthusiasm for engaging the developing world is reflected in the failure of the US and other states to live up to their financial obligations to the United Nations. Despite this, many recognize that resurrecting development from the 'lost decade' of the 1980s is imperative for building peace.

Improving conditions facing the agricultural sector on a global scale is especially vital for peace and prosperity and sustainable development in the long term. Peace and development must be built from the ground up. Addressing the problems facing agriculture and the rural communities should be foremost within strategies that seek to bring about prosperity and peace. One of the issues of contention within rural society that we have focused on particularly is the distribution of land, and history suggests that the social cost of not implementing land reforms in a fair and equitable way can lead to costly long-term conflict (Binswanger, Deininger, and Feder, 1995). Intimately tied to such issues is the larger political-economy setting where states should minimize taxing agriculture and rural society and eliminate the distortions that harm overall economic performance. These issues are highly salient to what the World Bank and other donor agencies refer to as good-governance issues. Part of the process of eliminating distortions would be for politicians in both the North and the South to come to equitable terms about access to markets, control of capital, and other relevant financial and trading issue through such organs as the World Trade Organization.

Changes in the overall policy environment and the provision of land for small farmers are crucial steps in the campaign to improve productivity. However, systematic analyses of settlements of new lands in West Africa show that the productivity and incomes of these farmers improved only marginally in the absence of good technology and other inputs for intensive production suitable to their specific production

"State Interest vs. International Obligations: The Case of North Korean 'Food Refugees'"
is a work-in-progress by Shin-wha Lee
of the Graduate School of International Studies,
Korea University, Seoul, Korea.
The following is an excerpt from this paper:

The current North Korean humanitarian crises can be summarized as follows. First, although unprecedented flooding and drought in recent years exacerbated the food supply problems, years of the government's military-first policies and the inefficient command economy are largely responsible for the current famine-stricken plight of North Koreans. Second, substantial parts of international relief aid are believed to have been diverted for personal gain by North Korea's military and government elites. Third, political calculations of both donor and recipient states have been in the way of aiding North Koreans in desperate need. Fourth, since maintaining a minimum standard of subsistence in their daily life is taken for granted, the majority of North Koreans do not appear to leave their homes unless faced with imminent death due to starvation. The defection of North Koreans in search of food is a strong indicator of the extent and severity of the country's famine. Fifth, North Korean famine victims who fled into China or countries other than South Korea are now trapped by political, diplomatic and legal restraints.

These points clearly represent two dilemmas in reconciling people's security and welfare with the interests of the states involved: one is the misbehavior of state leadership in a sovereign state who place their own interests (greed) over their citizens' basic needs; and the other is the reluctance of many states to provide aid to those suffering at home or asylum to those fleeing their home countries for survival. There are neither international laws and systems that effectively address a state's wrong policies nor are there mandatory international norms dictating a state's humanitarian action for other states in need.

conditions (McMillan et al., 1998). While increasing the productivity of farming to fill the burgeoning demand for food, for example, one must also be mindful of the environmental consequences. Deforestation to satisfy land hunger and the demand for food, for example, could have repercussions in terms of climate change and soil degradation (Tweeten and McClelland, 1997). The development of high-yield crops and better methods of farming is crucial for increasing production without negative environmental consequences. Research to develop high-yield crops that require fewer pesticides and are more environmentally appropriate and better farming methods that conserve water and make production more sustainable, can ensure that productivity increases go hand in hand with the protection of the natural resource base (Pinstrup-Andersen & Pandya-Lorch, 1998).

It may be problematic for donor agencies to bring about sufficiently effective changes in the overall policy environment of a developing country to affect changes in the structure of agricultural production through land reform. However, developing and diffusing new technology through collaborative research activities offers tremendous possibilities. The adoption of new technologies by poor farmers has proved to be effective in increasing production across continents, countries, and commodities (Oehmke, 1997). Typically, the rate of return on the development of new technology is very high, and there are few political considerations for donor agencies and little public-sector influence on the decision to adopt new technologies. Given the opportunity, farmers simply adopt what works McClelland, 1997). Collaborative agricultural research and extension across continents, regions, and countries promises large dividends.

The world's war zones have seen an increasing number of persons who have been displaced internally and externally, as well as an increase in peacekeeping activities to which the industrialized countries commit funding and personnel. Local conflict potentially affects the entire world community, not just the developing world. The international community has interests beyond those grounded in humanitarian reasons, in improving agricultural production and eliminating scarcity in the developing world, in preserving the environment, and ultimately in preventing armed conflict. Such goals can be achieved only if the quest for more efficient ways of producing food, sustaining livelihood, and managing the environment is actively pursued in developing countries.

Most of the know-how for efficient production of food is generated in the North. This research is conducted under conditions very different from those within most developing countries and much of this knowledge bypasses the farmers of the South. Research has an important role to play in lowering the costs of production while sustainably increasing output in Asia, Africa, and Latin America.

If the prices of food are lowered, people will resort less to subsistence production and extensive grazing which are highly detrimental to the environment. Efficient water management and the resolution of water conflicts are essential. Rural societies all over the world stand to gain from technologies and from learning how to improve the quality of food and preserve the environment. The elimination of scarcity will ultimately promote peace and development and improve the quality of rural life.

The necessary infrastructure already exits. The Food and Agriculture Organization (FAO), the United Nations, and the World Bank are all organizations devoted to improving the conditions facing agriculture. Some 20 international centers are engaged in the research to improve farming and raise the livelihoods of rural smallholder farmers. The Consultative Group on International Agriculture (CGIAR) supports 16 of these centers that, with a national partner, undertake research on food crops, forestry, livestock, irrigation management, aquatic resources, and policy. Working closely with the affected people and governments, these research, technical assistance, and policy groups are centrally located to evaluate the problems and prospects of agriculture in developing counries. However, in a report to the Carnegie Commission on Preventing Deadly Conflict, Kennedy et al. (1998:29) argue that 'the research effort is under some threat from the reduction in funding of the centers of the…CGIAR that have been the source of so much past progress.' This article also deplores the widespread hostility to the use of bio-technology, which may lead to the deployment of valuable methods to improve agricultural production.

Donor agencies and foreign investors are also in a key position to influence national and international decision-makers. Such participatory action is likely also to activate local civil society and thus enhance and preserve democracy. In the longer term, this will have positive consequences in terms of less corruption and less conflict, thereby safeguarding higher returns on these investments. Peace and prosperity in the developing world will also have a positive impact on the well-being of the industrialized societies by helping to create and sustain jobs, and stemming problems arising from mass immigration and refugeeism.

Without cultivating development—a process highly dependent on favorable conditions for agricultural production and rural livelihood—there can be no sustainable peace. Enhanced productivity will provide the burgeoning food needs of a rapidly urbanizing world, especially the urban poor, who are easy conscripts of armed violence. The fight against hunger, scarcity, environmental pollution, and poverty can also convert hapless soldiers of violence into productive members of the global community. If prosperity for all is to be harvested in the 21st century, then the conditions fostering peace will have to be cultivated.

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[1] This paragraph builds on Gleditsch (1998: ch. 1) and on data from the Correlates of War (COW) project (Singer and Small, 1994). We follow COW in requiring that an armed conflict contain at least 1,000 battle deaths to be counted as a war.

[2] High dependence on agriculture (measured in terms of its share in GDP and agricultural labor as a share of the total labor force) are very strongly correlated with per capita income (–.84 and –.79 respectively). The same is true of these two measures and human development variables such as literacy, child mortality, and longevity.

[3] See Bates (1981, 1988), Binswanger, Deininger, and Feder (1995), Lipton (1976), Lipton and Ravallion, (1995), and Weede (1986,

1987).

[4] UNDP (1998: 93) cites a figure of US $335 billion in annual subsidies to agriculture in the OECD countries while all developing countries spent US $10 billion. However, developing countries spent much more than double the OECD countries subsidizing energy.

[5] This perspective is generally neglected by many of those who cite environmental pressures as the sole cause of rapid urbanization and landlessness. Policy does matter. For more sophisticated links between environmental pressures and policy outcomes, see Kahl (1997: 11), who notes that in the 1990s Sub-Saharan Africa's unemployment is 50–100 percent higher than it was in the 1970s. High population growth and stagnant economies have created bulging labor forces with no work.

[6] Out of the current global labor force of 2.8 billion, a 120 million are unemployed and another 700 million are underemployed. The International Labor Organization has estimated that 1 billion more people will be added to the labor force in the next two decades, see Kahl (1997: 11–13).

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Environmental Change, Security, and Social Conflicts in the Brazilian Amazon

by Alexander López

Abstract: The links among environmental change, notions of security, and social conflicts in the Brazilian Amazon are multiple and complex. Successive Brazilian governments and the Brazilian military have found a distinct relationship between environmental matters and security issues through a focus on state sovereignty. This relationship is often articulated in terms of defending national sovereignty instead of preserving Brazilian ecosystems. Furthermore, the links between environmental change and social conflicts should be understood through a multi-step process of externalities, referred to here as "side-effects," where ecological scarcities contribute to other political, social and economic conditions that more directly precipitate conflict. Hence, *direct* causal links between environmental change and social conflicts are rare in the Brazilian Amazon.

The case of the Brazilian Amazon illustrates how governments can be subjected to intense influence from the international community. Demands from the international community have had critical impacts, both positive and negative, on the environment of the Brazilian Amazon. In recent years, the assertion of interests by some multilateral institutions (World Bank), industrialized countries (United States and Germany) and nongovernmental organizations (NGOs) has precipitated a number of reactions from the Brazilian government. It is important to note that such reactions have often been framed in security terms. The Brazilian government has reacted with a defense of Brazilian sovereignty in the Amazon while accepting the importance of some global environmental standards and international cooperation. However, this governmental acceptance of environmental concerns is framed in terms of rights and responsibilities of states, underscoring the principle of national sovereignty and the role of national security institutions in managing the Amazon basin. Hence, environmental management in the Brazilian context remains squarely within the traditional conception of security and its preoccupation with state sovereignty.

Sovereignty and the Brazilian Amazon

Does it make sense to speak of sovereignty in the Brazilian Amazon? The question can be answered by tracing the debate on Amazonian management. Applying a territorial criterion, the former Brazilian president José Sarney declared "the Amazon is ours," in 1989 in a statement entitled *Our Nature*. Sarney goes on to state "[it] is situated in our territory."[1] The name *Our Nature* suggested that Brazil was entitled to exercise internal sovereignty on environmental policy.

Brazilian sovereignty over the Amazon rain forest has been challenged by several actors, especially NGOs, on the ecological grounds that the importance of the Amazon extends far beyond the territory of Brazil. Part of the argument is based on the fact that the Amazon rain forest extends across the borders of the sovereign territory of Brazil to neighboring states. It should be remembered that the Amazon is shared by eight states.[2] The fixed territorial space in political terms does not always coincide with the territoriality of the ecosystems, which slices across geopolitical boundaries. Therefore, sovereignty conceived in its traditional way, as rule over a fixed, static territory, becomes problematic.

An internationalized conceptualization of the Brazilian Amazon implies that in the environmental arena, sovereignty no longer merely serves as the source of the state's claim to manage natural resources in the way it chooses without abiding by international standards. As Keohane (1995) points out, sovereignty no longer enables states to exert effective supremacy over what occurs within their territories. Rather than connoting the exercise of supremacy within a given territory, sovereignty provides the state with a legal grip on an aspect of a transnational process, whether involving multinational investment, the world's ecology, drug dealers, or other transnationalized issues. Thus, sovereignty is less a territorially defined barrier than a bargaining resource for politics characterized by a complex transnational network (Keohane, 1995: 176-177).

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Sovereignty questions in Brazil require understanding two opposing perspectives that dominate the debates over environmental impacts on the principle of sovereignty. One perspective holds that sovereignty is eroding and weakening in the face of an antithetical relationship between sovereignty and ecology. Because ecosystem and environmental processes do not respect state borders, sovereignty itself becomes a key institution of global-scale environmental destruction. International treaties to address transboundary environmental issues represent an erosion of sovereignty as states agree to proscribe their actions. The second perspective claims that international processes, and in particular, the emergence of multilateral institutions for environmental protection, do not inevitably erode state sovereignty and may even strengthen it. By placing states at the center of institutional responses and strengthening their capacity to act collectively, it is argued, the menu of choices available to states is being expanded not restricted (Conca, 1994: 702). Furthermore according to Conca, treaties that may limit state actions vis-à-vis other states (external sovereignty) may simultaneously newly empower states domestically (internal sovereignty). In the case of Brazil, Conca suggests this more complex combination strengthens state and military actors internally while ceding external sovereignty through international treaties.

The Debate over the Internationalization of the Brazilian Amazon

As will be illustrated with the statements by former French President Mitterand, U.S. Vice President Al Gore, and former Soviet Premier Mikhail Gorbachev on various occasions, Brazil has been requested to assume a broader global responsibility vis-à-vis the international community. In addition, some NGOs, such as International Survival, have been particularly active in pushing forward some activities considered threats by the military. For instance, in 1989, International Survival mounted its largest campaign to date to press for the restoration of the Yanomani Park in northern Amazônia along the Venezuelan-Brazilian border.

These examples undergird a so-called internationalization of the Amazon that has been perceived as a real threat in Brazilian circles. As a result, in 1991, the Congressional commission of inquiry on the Internationalization of the Amazon (CPI) was established and mandated to investigate the existence of clandestine airports and the activities of religious missions in parts of Roraima, which supposedly provoked the internationalization of the Amazon. In the final report, the CPI focused much attention on the development model followed in the region and the mineral riches of the Amazon. Many of the denunciations alleged a mainly Anglo-American neo-imperialist conspiracy, in which the environment served as a pretext for the new international order and in which NGOs played a leading role (Kolk, 1996: 121). In addition, there was a preoccupation with the potential creation of a bi-national Yanomani Park in the Venezuelan-Brazilian border region. According to Kolk (1996), the sovereignty and nationalist claims increased as the state felt threatened by environmental issues and the consequences of such a park for crucial economic considerations.

The Brazilian preoccupation with the internationalization of the Amazon can be seen in three concrete areas: the program of debt-for-nature swaps, the *Calha Norte* program, and the *Programa de Defensa do complexo de Ecossistema da Amazônia Legal* known as *Nossa Natureza*. In the first response the United States, France and the Netherlands put forward a proposal for debt-for-nature swaps, in which a portion of Brazil's foreign debt would be retorted in return for conservation projects. Brazil, with the largest foreign debt and the most extensive rain forest, was a natural target. However, in announcing the new policy (*Nossa Natureza*), President Sarney rejected the use of debt-for nature swaps on the grounds that they were an infringement of Brazilian sovereignty. Brazil worried that debt-for-nature swaps could imply not only the creation of a large Amazon reserve to protect the environment, but also a future internationalization and exploitation of minerals by international forces under the pretext of protecting the environment.

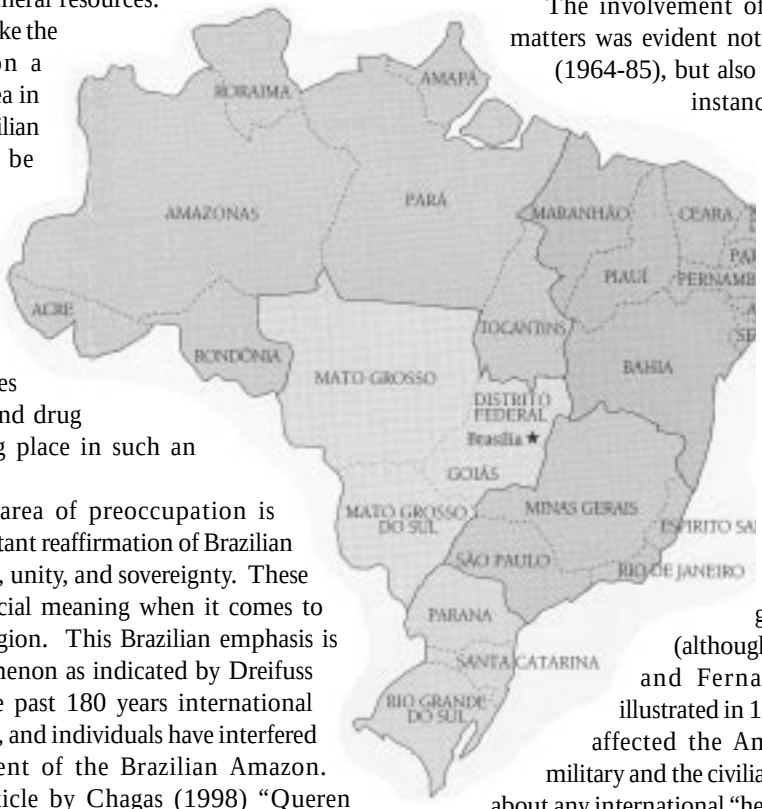
The second example is the *Calha Norte* project, which aims to intensify the military presence in the Amazon, precisely north of the rivers Solimões and Amazonas. Born out of the transition from a military to a civilian government (1985), the project was justified by a number of reasons. However, one of the most influential factors was the possible creation of a bi-national Yanomani Indian Park. The main concern was that the Yanomani Park in the Venezuelan-Brazilian border could evolve into an independent indigenous state, manipulated from abroad, due to the active participation of some international NGOs such as International Survival.[3]

Finally, the program *Nossa Natureza* (Our Nature) was formulated to diffuse international pressure due to the international outcry at the rate of deforestation, the murder of the leader of the Amazonian rubber tappers Chico Mendes, and the Indian action in Altmarira aimed at stopping dam construction at the Xingú River. The centerpiece of the *Nossa Natureza* plan was a proposed five-year $100 million program to undertake agro-ecological zoning of the Amazon. The program addressed six basic areas, namely: forest protection, chemical pollution from mining, the structure of the system of environmental protection, environmental education, research, and the division of the Amazon between protection areas, indigenous areas, and extractive areas (Costa y Ramos, 1992: 433). The military played a prominent role in Nossa Natureza as well. The working group for the plan was coordinated by an interministerial commission that was the institutional successor of the National Security Council headed by General Rubens Bayma Denys who was also in charge of the *Calha Norte* project.

The Military Preoccupation with the Amazon

The Brazilian military is preoccupied with the Amazon for at least two fundamental and interrelated reasons. The first one stems from the nature of the physical space, and the second relates to the international valuation of that physical space. The length of Brazil's Amazon borders, which have traditionally been

viewed as vulnerable, concerns the military as a possible security threat although no open inter-state conflict has resulted. From Oiapoque, in the extreme north of the country, to Chui, in the extreme south, the land frontier stretches 16,500 km. The Amazonian region is bordered by a line of frontiers of 10,948 km, four times the distance from Madrid to St. Petersburg and the equivalent of approximately 70 percent of the total extent of the Brazilian international border (Dreifuss, 1998: 15).[4] It should be remembered that according to the treaty for Amazonian Cooperation,[5] seven more states share the Amazon, and Brazil borders six of them (Bolivia, Colombia, Peru, Guyana, Venezuela, and Suriname). Moreover, the extension of the borders is accompanied by such factors as low population density and poor communications, as well as the sensitivity of the area due to mineral resources. All these factors make the Brazilian Amazon a very vulnerable area in the eyes of the Brazilian military. It can be argued however that nowadays the real threats do not come from the neighboring states, but from the illegal activities (gold smuggling and drug trafficking) taking place in such an area.



The second area of preoccupation is evident in the constant reaffirmation of Brazilian territorial integrity, unity, and sovereignty. These concepts have special meaning when it comes to the Amazonian region. This Brazilian emphasis is not a new phenomenon as indicated by Dreifuss (1998). Over the past 180 years international agencies, countries, and individuals have interfered in the management of the Brazilian Amazon. Following the article by Chagas (1998) "Queren Internacionalizar Nossa Amazônia," Al Gore was quoted as saying, in 1989, "Contrary to what Brazilians think, the Amazon is not theirs, but all of ours." Francois Mitterand declared that Brazil needs to accept a relative sovereignty over the Amazon. In 1992, Mikhail Gorbachev declared that Brazil should delegate parts of its rights over the Amazon to a competent international organization. No wonder, then, from the military perspective, that a clear view of the preservation of territorial integrity and the unity of Brazil is constantly reasserted as one of its crucial goals. It has been stated by the armed forces that sovereignty will be preserved as long as possession of and jurisdiction over the territory is guaranteed, along with its indivisibility and the possibility of political actions that aim to preserve Brazil's vital interests. They have argued that the flexibility of the concept of sovereignty can not go beyond this limit.[6]

Militarizing the Brazilian Amazon or Greening the Military Apparatus

Some scholars (Deudney, 1990; Käkönen, 1994) have been skeptical about linking the environment to the military sphere because they argue that by placing both together, one could contribute to militarizing the environment instead of making the military industry "green." As Elliot points out (1998), even though environmental stress is identified as a non-military threat, environmental politics are militarized because the threat element is defined in the final analysis not by the impacts on human security or even economic security but by its relationship through the potential for conflict with the military and geopolitical security of the state (Elliot, 1998: 230).

The involvement of the military in environmental matters was evident not only during the military regime (1964-85), but also in the recent civilian period. For instance, the traditional preoccupation with national integration was increasingly overlaid with concern that Brazilian sovereignty in Amazonia was being called into question. This concern became the dominant theme in the Sarney administration's response to international criticism. The military's intervention, from designing to implementing environmental policies, continued in subsequent governments of Collor de Mello (although to a lesser degree), Itamar Franco, and Fernando Henrique Cardoso. As illustrated in 1998 during the enormous fires that affected the Amazonian state of Roraima, the military and the civilian government were very suspicious about any international "help" including the assistance offered by the United Nations. The military rejected assistance on the grounds that such assistance could be utilized for external forces to claim international control over the Amazon.

The paramount role of the military in Amazonian environmental policy did not constitute a military monopoly on environmental policy. But the military's strong role in governance has been a constant feature of Brazilian leadership. To illustrate this argument, one can examine the civilian government's successor to the dictatorship's secret service (SNI). The successor body, called the Secretariat for National Defence (SADEM), coordinated *Nossa Natureza*. Former president Collor integrated SADEM into the Secretariat for Strategic Affairs (SAE) as the Department for Special Programs, whose responsibilities include *Calha Norte*. Another SAE department for macro-strategies has *Macro-Zoneamiento Ecolólico-Económico da Amazonia*. As part of the Collor program for the environment, SAE was given an important role in the

preparation of environmental policy. In addition, the weak and competing former Environment Secretariat (SEMA) and the Forestry Institute (IBDF) were combined, along with two other small units, to produce a unified environmental agency (IBAMA). Nominally under the Ministry of Interior, IBAMA operates with financial autonomy under the leadership of Sarney's former press spokesman Fernando Mesquita (Kolk, 1996, Domask, 1997).

The most recent relevant example of military participation in designing and coordinating environmental policies is found in the establishment of the *Sistema de Protecâo da Amazonia* (SIPAM), and the *Sistema de Vigilancia de Amazonia* (SIVAM). The SIPAM has three regional bases (Portho Velho, Manaus, and Belém), and general headquarters in Brasilia. It is under the umbrella of SIPAM that the much talked about SIVAM satellite system (*Sistema de Vigilancia de Amazônia)* is being implemented. SIVAM is once again a civilian-military project, integrated under the SAE.

According to Brazilian officials, the principal aim of SIVAM (which started to function in July 1997 and is expected to be operational by the year 2002) is to allow for the effective implementation of SIPAM, providing the Brazilian government with the necessary information for sustainable development (Dreifuss, 1998). Some of the most important information that the system will provide to the Brazilian government will be to track land occupation and usage, conduct surveillance and border control, identify illegal activities, and develop economic and ecological zoning. The remote-sensing SIVAM infrastructure includes eight meteorological and environmental satellites and five sensor-equipped Embraer ERJ 145 airplanes for aerial early warning (AEW) that are capable of registering images through the dense tree forest cover and providing information on soil quality. In addition, the system includes three Embraer 145 RS planes for remote sensing and Swedish radar and twenty radar stations coordinated by Cindacta (Dreifuss, 1998: 28-29).[7]

SIVAM has also been placed within the sovereignty discourse. For example, the company Raytheon (the American company building the system) and Brazilian authorities have stated that among the principal benefits Brazil will gain from SIVAM are the capacity to have positive control over the area and the capacity to promote the integration of communities among themselves and with the ecosystem. These capacities are viewed as a way to guarantee Brazilian sovereignty in the Amazon.[8]

This discussion has illustrated how the environmental politics surrounding the Brazilian Amazon has been framed to a large extent within the security framework. It is logical that the institutions defending national integrity and independence have reacted with skepticism to an emphasis on transboundary effects of environmental change in the Amazon basin. Regardless of this skepticism however, the military has not adopted a position of open confrontation over environmental management of the Amazon. On the contrary, they are actively participating in such a process. A clear example is their influence in SIVAM as well as in the elaboration of the *Macro-Zoneamiento Ecolólico-Económico da Amazonia.* For example, in a document produced in 1995 with the participation of SAE, a strategic perception of the Amazonian region—without diminishing the importance of national frontiers—places great emphasis upon environmental concerns and needs as well as the wealth of natural resources (biodiversity, waters, and minerals). The combination of these factors results in a potential paradigm shift for frontier sustainable development. This perception is confirmed in a recent statement by the Army Chief of Staff General Gleuber Veira, that "the new mission is co-operating with socio-economic development."[9] However, it remains to be seen if the military will become an agent of environmental protection, or on the contrary, if it will use the environment as an excuse to exercise more control over the Amazon, leading to more environmental disruption.

Environmental Change and Social Conflicts in the Brazilian Amazon

This sovereignty and environment discussion provides a critical context for now examining environmental change and the social impacts of this change. Deforestation presents the best known case for exploring the indirect links between environmental change and conflicts. An in depth look at deforestation follows a brief overview of systemic environmental change in Brazil.

The systemic nature of environmental change becomes apparent in the social consequences of the disruption from the three most important environmental functions: (1) a source of natural resources, (2) a source of environmental services, and (3) an assimilator of waste. Overuse of natural resources in the Amazon has proceeded in large part because of non-participatory, authoritarian, and badly administered development measures. The impoverishment of living space is provoked above all by ill-conceived macro-projects; e.g., large dams, cattle ranching, and mining activities. A clear linear relationship of impoverishment of living space is built from *deforestation* to *soil erosion*, to *loss of nutrients*, to *deficient crops*, and consequently, to *decrease in the well being of the Amazon population*.

The social consequences of the overuse of natural resources, overstrain of the sink capacity, and impoverishment of the space of living, are evident. Among the most important are a decrease in food security, threats of new diseases, and expansion of the already existent, low level of colonization stability that contributes to high rates of intra-regional migration. This last factor of migration, implying high rotation rates, has a direct effect on the social conflicts taking place in the basin.

The Brazilian Amazon's three most important resources, land, water, and forest, provide examples of the social implications of environmental change. For land, the low ecological carrying capacity of the Amazon basin, especially in the tropical *terra firme* soils (land not subject to annual inundation), brings specific limitations to colonization and agropastoral activities. As an example, the rapid decrease in agricultural production on colonized soils inhibits capital accumulation, settlement stability, and consequently, the construction of stable social relations. Thus, this situation causes

a perpetual state of human migration and further deforestation. This cycle often results in open conflicts over access to land resources.

Water resource issues in the Amazon present several examples where environmental change has strong social implications. The best known example comes from mining activities and the associated mercury contamination of watercourses. This pollution has contributed to conflicts mainly between Indian populations and *garimpeiros* (miners). Second, conflicts occur due to the increasing pressure on fishery-resources of smaller lakes. Pressure for regional urbanization, the development of fishing technology, the spreading of motor canoes and motor boats, and the growing number of regional ice factories, create these conditions (Shönemberg, 1994: 26). Both community and commercial fishermen ignore and externalize the environmental impacts of their activities. Their practice is to move on to the next fishing ground when one is cleared.

Social conflicts as a result of forest depletion in the Brazilian Amazon have been reported in several instances. The most well known case has been the 1988 assassination of Chico Mendes, the former president of the Rubber Tappers Union by ranchers. The process of deforestation through ranching activities in general has had a direct effect on the life of the forest-dwellers. The most evident conflict has been the expropriation of the customary lands of forest peoples. This clearing of forest for cattle ranching undercuts the survival strategies of Indians, rubber tappers, and nut collectors, whose way of living is strongly related to nature and whose social organization is based on the communal use of natural resources. This way of living is in opposition to the private exploitation of these resources by miners, large landowners, mining companies, and logging enterprises.

The Legal Brazilian Amazon

The Case of Deforestation

Deforestation is the most visible and quantifiable aspect of environmental change and is utilized here to explore the possible links between environmental change and social conflicts in the Brazilian Amazon. On a general level, the main direct sources of deforestation in the Brazilian Amazon can be attributed to cattle ranching, colonization and agricultural settlements, road building, mining, logging, dam construction, and urban development. Agropastoral activities are placed as the most important source in most of the Amazonian literature. Private capital investment in cattle ranching through tax incentives, agricultural production through rural credits, and small farmer settlement, are the most important direct factors influencing the source agropastoral activity, thus placing it as the most important source of environmental change.

As the most visible aspect of transformation taking place in the Amazon, deforestation is at the center of public discussion. Debates focus on the extent as well as the impacts of deforestation on the Amazon basin. The extent of deforestation has lead to academic and political debate for two reasons: the extent of damage is poorly known even though the tool of remote sensing has been utilized, and deforestation has direct implications on policy making. For instance the Brazilian government has been concerned about the empirical data published by studies on Amazonian deforestation, especially after a 1988 World Bank study on Amazonian deforestation found a high rate of deforestation of close to 12 percent.

According to May and Reis (1993), in the mid-seventies deforestation was practically restricted to the so-called Bragantina area, located on the eastern border of Pará with Maranhâo, and to the north of Tocantis. During the late seventies and throughout the eighties deforestation rates within the region showed spectacular growth, most specifically in northern Mato Grosso, following a northwest path of expansion toward the states of Rondônía and Acre, stimulated by the paving of highway BR-364. This area also received a disproportionate share of economic activity, government investments, and regional development incentives.

Although deforestation is recognized as a critical problem, it is difficult to present an exponential rate for the region that will mean that the cleared area could rapidly expand to encompass the entire region. Rather than an exponential rate, forest depletion rates vary from year to year and vary from region to region. Some of the trend analyses made in the early 1980s (exponential ones) indicate that the states of Pará, Mato Grosso, Maranhâo, and Rondônia would be completely deforested by 1990. But data from the National Institute for Space Research (INPE) obtained from satellite imagery show that in 1990, no more than 12.6 percent had been cleared in Rondônía, the most deforested of Amazonian states.[10]

Over the past ten years, INPE (1998) estimates indicate that the total area deforested has increased from 401.400 square kilometers in 1989 to 517.069 square kilometers in 1996.[11] However, when considering the relative numbers, it is possible to see that there has not been a constant increase in the annual rate of deforestation in the Brazilian Amazon. Thus, the rate of deforestation during the period 1990-91 (0.30) is lower than during 1989-90 (0.37). Along these lines, the rate for the year 1995-96 (0.51) is also lower than during the year 1994-95

(0.81).[12] The Brazilian Amazon therefore is an open system ruled by internal and external forces that determined years of incremental rate of deforestation.

The problem of deforestation therefore must be viewed in context. One must understand that Amazonian deforestation is strongly associated with socio-economic variables. The deforestation should not just be presented as a problem in which members of the Brazilian society are cutting down the trees in the Amazon region. Instead the problem is a more deeply rooted problem relating primarily to the way millions of Brazilian people live.

Fearnside (1987) divides the present causes of deforestation into two categories: proximate causes and underlying causes. Proximate causes motivate landowners and claimants to direct their efforts to clearing forest as quickly as possible. The underlying causes are linked to wider processes in Brazil's economy (Fearnside, 1987: 42). Among the main proximal causes of deforestation are land speculation, tax incentives, and negative interest loans. Land speculation brings forest destruction as clearing establishes proprietary claims and raises the resale value of land. Certain tax incentives allow businesses to avoid paying taxes owed on enterprises elsewhere in Brazil if money is invested in Amazonian ranches. Finally, some financing of government-approved ranching projects comes at nominal interest rates lower than inflation.

In addition, certain general macroeconomics policies such as the income tax, the land tax, and land titling regulation are providing economic incentives for deforestation. Land taxes were aimed at converting unused forestland into more productive land. Therefore, farms containing forest were taxed higher than the ones containing only pasture and cropland. In this way, the policies created a direct incentive for large landowners to convert their land forest.[13]

Fearnside also groups together underlying causes of deforestation. He lists inflation, population growth, and road building. Inflation promotes speculation in real property, especially pasture land. Moreover, it increases attractiveness of low-interest bank loans for clearing. Population growth increases demand for subsistence production, increases the capacity to clear and plant, both for subsistence and cash crops, and increases political pressure for road building. Road building promotes immigration to the Amazon, and increases clearing by persons already present in the region (Fearnside, 1987: 45).

Natural and Social Factors in Environmental Conflict

It is often assumed that environmental disruption causes ecological scarcity, and that ecological scarcity in the same way could contribute to social conflicts.[14] However, one could argue that the problem is not scarcity of renewable resources such as cropland, forest, and water that leads to conflict even though the classical functions of the environment are clearly being undermined in the Brazilian Amazon. Instead, it is the product of social interactions that leads to the environmental change and social conflicts. Therefore, the role of ecological scarcity as a proximate variable causing conflicts is obscured by social variables in the Amazon case. Instead, environmental change, in large part created by prior social, political, and economic variables, contributes to so-called "side-effects" or secondary impacts that can in turn, precipitate conflict. Hence it is the migration or the economic disruption caused by environmental changes that contribute directly to conflict rather than the environmental change itself.

This indirect role for the environment in contributing to conflict is one that is increasingly recognized by researchers.[15] Drawing from the case of the Amazon, one can conclude the web linking environmental change to social conflicts in the Amazon experiences the following phases:

Phase I: *Environmental change*
Deforestation
Pollution from mining
Floods caused by hydroelectric projects

Phase II: *Side-effects*
Economic disruption
Population displacement

Phase III: *Conflict-issues*
Land conflicts
Mineral conflicts

One would state that environmental change has never contributed to manifest conflicts in the Amazon as a sole source, and rarely as a direct source. A manifest conflict is a process that is accompanied by conflict behavior. A non-violent disagreement is not included as manifest conflict. Instead, it has contributed through side effects, which most importantly have been a disruption of economic activities and population displacement. In the Brazilian Amazon, manifest conflicts are typically associated with the land and mining issues. The constellation of actors in land conflicts constitutes landless people, *posseiros* (settlers without legal title), *grilleiros* (landgrabbers), and large landowners. In mining, the conflicts occur between the *garimpeiros* and Indians.

Environmental change has generated several interrelated social effects that have resulted in social conflicts. The contribution of environmental change to manifest conflicts in the Amazon could be explained in terms of the externalities produced by the process of environmental change and this has to be linked necessarily to the pattern of economic growth implemented by the Brazilian State in the Amazon.

The most important side effect of environmental change has been population displacement. In the Amazon, the main sources of environmental change (agropastoral expansion, mining activities, logging, and hydroelectric projects) have increased pressure on people, particularly the native population. The relocation of people as a result of the spatial impacts of these projects means that these people become agents of further project-triggered effects, by displacing one another. Clearly in states such as Pará, different social groups compete with one another in their struggle to gain a living in frontier areas where unclaimed lands are increasingly in short supply. In addition,

environmental change has contributed to population displacement, and therefore to a high number of conflicts due to a large sector of the population that came to the area suddenly finding themselves excluded of the economic model. The exclusion occurs either because the soils were not good enough to support agriculture at commercial levels and/or subsistence level, or because the soil was already deteriorated by previous deforestation. It should be remembered that with the high deforestation in southern Pará, erosion starts to be a serious problem and the nutrient stocks normally decline. The high deforestation rates have provoked an acute process of environmental change because small farmers and colonists have to move further into the frontier, with the consequence of further deforestation.

A second important side effect has been the disruption of economic activities through the utilization of natural resources. In fact, this side effect could be linked to potential manifest conflicts, as can be observed in the negative effects on the traditional shifting agriculture. This kind of agriculture, which is fundamental for native populations in the Brazilian Amazon, requires regeneration of second growth. The practice of clearing large tracts of forest and converting the land to pasture disrupts this method. Thus, once the base for practicing shifting agriculture has been disrupted, the population living from this system has reduced opportunities to develop this type of agriculture. Moreover, the impact of environmental change on traditional floodplain agriculture, inland fisheries, and forest productivity has provoked serious disruption affecting populations such as indigenous and riverine populations who have practiced *varzea* (floodplains) agriculture for many years.

Fishing is an important economic activity that has been disrupted by environmental change. Rivers have suffered pollution from mining activities affecting fishing activities by the Indian communities. In addition, in places such as southern Pará, violent conflicts have been registered between traditional fishermen and commercial fishermen. The construction of dams is also changing the migration pattern of many Amazonian fish. Finally, the deforestation of food plain forest also contributes to the decrease of fish as many species feed of tropical fruits and seeds. All these aspects lead to serious constraints on income and job opportunities of the riverine populations, creating social stress.

Another population affected by environmental change has been the extractivist in Pará (rubber tapers, nut collectors). Deforestation has reduced and/or eliminated the production of Brazilian nuts, natural rubber, natural oil, and timber. In this area the expansion of cattle ranching, logging activities and projects such as Great Carajâs have led to the clearing and burning of large areas of rubber trees for pasture land and for charcoal. In short, the process of environmental change in the Amazon has provoked as side-effects a strong process of population movement and economic decline for the native population, with clear influence in the dynamic of manifest conflicts.

Understanding the Links Between Environmental Change and Social Conflicts

Based on this brief discussion of environmental change in the Brazilian Amazon, one can draw a number of conclusions. The links among the process of environmental change, notions of security, and social conflicts in the Brazilian Amazon are multiple and complex. Successive Brazilian governments and the Brazilian military have found a distinct relationship between environmental matters and security issues through a focus on state sovereignty. This relationship has often been articulated in terms of defending national sovereignty instead of preserving Brazilian ecosystems. The Brazilian military's direct roles in project's such as the remote-sensing system SIVAM indicate that the primacy of state sovereignty concerns remain firmly entrenched in Brazil's approach to the environment despite international calls for "internationalizing" the rainforest.

Furthermore, the links between environmental change and social conflicts should be understood through a multi-step process of externalities, referred to here as "side-effects," where ecological scarcities contribute to other political, social, and economic conditions that more directly precipitate conflict. In most parts of the Amazon, even though social groups depend strongly on the natural environment, conflicts do not emerge because of scarcity of natural resources. Even in cases of strong dependency on natural resources, manifest conflicts could arise not only because of scarcity of resources, but because incompatibility of different social structures materialized in different patterns of resource use. Rather, the conflicts emerge because (as illustrated in the state of Roraima) the spatial demands of Indians such as Yanomani and Makuxi have intersected with the demands of non-indigenous groups such as *garimpeiros* and landowners. Hence, while the environmental context in Brazil is a conflict one, *direct* causal links between environmental change and social conflicts are rare in the Brazilian Amazon.

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[1]Quoted in "Brazil angrily unveils plans for the Amazon." *The Washington Post* April 7, 1989.

[2] The eight states are Bolivia, Brazil, Columbia, French Guiana, Guyana, Peru, Suriname, and Venezuela.

[3]According to Colonel Geraldo Lesbat Cavagnary Filho "Defensa com Democracia e Desenvolvimento." In *Teoría e Debate*, no 24, Sâo Paulo, March-April, 1994.

[4]Shared frontier lengths are: French Guiana 730 km, Venezuela, Guyana and Surinam 3,649 km, Colombia 1,644 km, and Peru 2,995 km.

[5] Because of its dependent status on France, French Guiana is not a signatory to the Treaty of Amazonian Cooperation.

[6]See "*O Brasil e suas Forcas Armadas*" Estado-Maior das Forcas Armadas. Presidência da República, Brasilia, 1996, p19.

[7]Interview with Colonel Antonio Faria, Secretaria de Asuntos Estratégicos, Conference at *4th National Encounter of Strategic Studies*, Unicamp, Campinas. 10-15 May, 1998.

[8]See Raytheon's Internet web page at http://www.raytheon.com.

[9]Análises Temáticas e Sistema de Informacâo Territorial para Macro-Zoneamiento Ecológico-Económico da Amazônia. Resumo Ejecutivo. 1st version, August 1995 (Convenio FBDS/ SAE/ IBGE/ FUNCATE/

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Environment and Security in an International Context

Executive Summary Report

NATO/Committee on The Challenges of Modern Society Pilot Study
Pilot Study Co-Chairs
Kurt M. Lietzmann
Gary D. Vest

Abstract: NATO, its Member States, and other security organizations are increasingly concerned with non-traditional threats to security, including the consequences of environmental change. This report addresses the relationship between environmental change and security at the regional, international and global levels. To support the development of these conclusions and recommendations, the Committee on the Challenges of Modern Society Pilot Study developed methodologies and approaches for analyzing the relationship of environmental change and security and prioritizing its key elements. The interdisciplinary nature of the Pilot Study has provided a multilateral forum for cooperation, exchange and dialogue among the environmental, development, foreign and security policy communities.

Preface

In 1969, the North Atlantic Treaty Organization (NATO) established the Committee on the Challenges of Modern Society (CCMS) as a unique forum for cooperation on issues of inter alia transboundary environmental protection and environmental problems in general. Through the CCMS framework, Member States conduct pilot studies and projects on a wide range of topics such as transboundary air and water pollution, marine oil pollution, and environmental problems stemming from the use of modern technology.

NATO, its Member States, and other security organizations are increasingly concerned with non-traditional threats to security, including the consequences of environmental change. The Pilot Study entitled "Environment and Security in an International Context" was launched within the framework of NATO/CCMS on the occasion of the NATO/CCMS Plenary Meeting in Washington, DC on 14 November 1995. This report summarizes the relationship between environmental change and security at the regional, international, and global levels.

The Pilot Study is co-chaired by Germany and the United States. Its main goal is to elaborate conclusions and recommendations to integrate environmental considerations in security deliberations and to integrate security considerations in national and international environmental policies and instruments. These conclusions and recommendations are guided by the principles of sustainable development and a precautionary approach, emphasizing preventive measures and strategies. They will ultimately provide a basis for senior-level decision-making. To support the development of these conclusions and recommendations, the Pilot Study developed methodologies and approaches for analyzing the relationship of environmental change and security and prioritizing its key elements.

The Pilot Study has evolved as a truly unique opportunity for the exchange of information and views from a wide range of experts in the scientific and policy communities. The interdisciplinary nature of the Pilot Study has provided a multilateral forum for co-operation, exchange, and dialogue among the environmental, development, foreign, and security policy communities. The completion of the Pilot Study through a consensus-based process offers the opportunity to continue and expand the spirit of co-operation developed over the course of our work.

The Pilot Study was made possible by the active co-operation of experts from government, academia, private industry, and

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Kurt M. Lietzmann, Head of Unit, Federal Ministry for Environment, Nature Conservation, and Nuclear Safety, Federal Republic of Germany and Gary D. Vest, Principal Assistant Deputy Under Secretary of Defense (Environmental Security), Department of Defense, USA. The contents of this Pilot Study Summary Report are the result of a consensus-based collaborative research process undertaken under the auspices of the NATO Committee on the Challenges of Modern Society. It was compiled by Ecologic-Centre for International and European Environmental Research, and Evidence Based Research, Inc. Final responsibility for the Report and the Pilot Study rests with its co-chairs. The findings and views enumerated in this report are those of the participants and contributors. They do not necessarily represent the views of the national governments that participated in the study.

non-governmental organizations (NGO) from the member countries of the NATO Alliance and Euro-Atlantic Partnership Council (EAPC). In addition, experts from other international and regional organizations played a valuable role in providing input on the conclusions and recommendations developed in the Pilot Study. Most importantly, we would like to acknowledge and thank all those who participated in the Pilot Study. We especially would like to commend and recognize all of those responsible parties who pr ovided not only their expertise through actively engaging in research and the delivery of papers and presentations, but also those who contributed their organizational support and planning assistance in making the Pilot Study plenary meetings and subgroup workshops a success.

Overall, we hope that the Pilot Study's Executive Summary Report and Full Technical Report provide a unique and lasting contribution to the recognition, analysis, and response to the relationship between environmental change and security and the impetus for effective co-operation, preventive action and response by institutions at the international, regional, and national level.[1]

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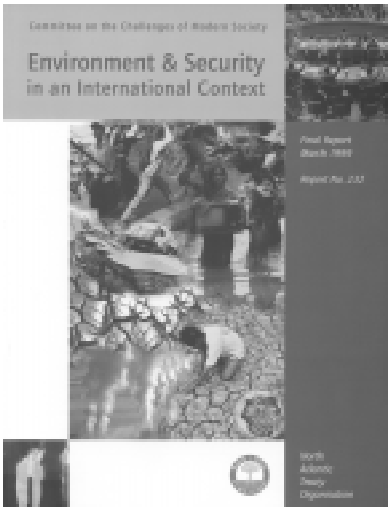
Introduction

Overview of Environment and Security

Since the end of the Cold War, traditional security concepts based on national sovereignty and territorial security have increasingly been brought under scrutiny. Instead, a broader definition of security that would incorporate non-traditional threats to security and their underlying causes such as economic decline; social and political instability; ethnic rivalries and territorial disputes; international terrorism; money laundering and drug trafficking; and environmental stress is being advocated. In particular, the relationship between the environment and security has been of increasing importance in recent years in both the scientific and policy communities.



The relationship between environment and security is addressed in a number of research efforts.[2] Several of these research efforts aim to 'redefine' or broaden the concept of security to include social, economic, and environmental factors. In contrast to the classical narrow concept of security, the broader concept proceeds from a differentiation of levels of analysis (individual, national, regional, and international security).

Other projects approach the debate by making distinctions among the factors which affect security. More conceptual, they address the conditions under which global change and environmental degradation lead to violent conflict. They attempt to establish a causal relationship between environmental factors and conflict through case study based research projects.[3] Researchers are also attempting to derive conclusions about the importance of environmental stress to the incidence of conflict.[4] Additionally there is research focusing on the human dimension and its role in environmental change and security as well as the role of climate change and its socio-economic impacts on violent conflict.[5] Our Pilot Study builds upon this research.

The growing global concern for the environment over the last 30 years culminated in the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 which made a major contribution to the recognition of environmental issues in the international arena. At this watershed conference, the principle of 'sustainable development' was first endorsed by the global community. There was a general acceptance of the idea that environmental, economic, and social issues are interdependent and cannot be pursued separately. Since then the principle of sustainable development has become an important guideline for action in the field of environmental, economic, and development policy. Moreover, due to the increasing discussion and research about the potential for large-scale environmental changes and the general acknowledgement of the relationship between environmental change and human society (social, economic, and demographic issues), there has been more attention paid to the question of the relationship between environment and security.

The degree to which environmental stress actually contributes to the incidence and escalation of conflict depends on the relationship between the consequences of environmental stress and on a number of socio-economic, political, and other contextual factors. Environmental problems can have a serious and long lasting negative influence on peoples' living conditions and can

lead to economic and social problems such as poverty, food insecurity, poor health conditions, and migration, within as well as between countries.[6] Even so they seldom directly cause or trigger crisis and conflict. Political and economic stability and capacities, cultural and ethnic factors, or the existence of non-violent mechanisms of conflict resolution have a large impact on how environmental stress is dealt with by individuals and political stakeholders. If these contextual factors are unfavorable, the incidence of conflict due to the consequences of environmental stress is likely. If the contextual factors are favorable, the probability of a peaceful solution is improved.

As these environmental challenges continue, their impact on the potential incidence or escalation of tension and conflict are becoming a key concern for policymakers. However up to now—despite the recognition of the sustainability principle—the potentially unfavorable effects of unsustainable action, environmental degradation and resource scarcity have not gained the necessary recognition by political actors at the various levels.

For example, the consequences of global climate change have effects at the regional and local level in areas such as small island states, coastal zones and low-lying countries, and drought stricken regions. In this case, standards of economic growth, rising standards of living in the developing world and high living standards in industrialized countries contribute to global environmental problems such as climate change. The transboundary effect of these changes exceeds the capabilities of individual nations to deal with them in a comprehensive manner. Furthermore, the more indirect relationship between causes and effects and between those who caused and those who suffer from environmental change and its effects also impedes political action. Political action at the international level is crucial in order to deal with the issue of environment and security.

Research has indicated that global environmental change and its socio-economic effects are likely to intensify in the future. The intensity as well as the interdependence of these problems will have effects on an international scale and also begin to impact industrialized countries more directly. Therefore, these challenges call for an enhanced co-operative action at the international level, integrating actors from different policy areas including environmental, development, foreign and security policy.

Origins and Working Program of the Pilot Study

Despite lacking scientific consensus on the interlinkages between environmental change and security, NATO/CCMS took up the subject during the Washington DC, NATO/CCMS Round-Table in November 1995. The participants agreed that it would be useful to summarize the existing knowledge on the links between environment and security and to develop appropriate policy approaches for preventive action. It highlighted that man-made environmental degradation, resource depletion and natural disasters may have direct implications for the security of the international community and that a comprehensive threat assessment, a risk analysis, as well as a prioritization of risks to international security was needed to address these challenges. The Pilot Study "Environment and Security in an International Context" which was initiated at this meeting, should address these tasks.

At an early stage of the study, participants identified several gaps in the existing knowledge base on the relationship between environment and security which should be addressed primarily in the analysis. First there were basic methodological and conceptual issues of approaching the relationship between environment and security. Secondly, there were questions of data availability and a lack of generally accepted indicators of environment and security as a base for decision-making. Finally, there were policy-orientated issues concerning threat assessment of environmental problems and the development of policy responses.

To prepare for a Pilot Study and to develop a proposal for its terms of reference to be submitted to CCMS, the German Federal Ministry for Environment, Nature Conservation, and Nuclear Safety hosted the initial workshop in Aachen, Germany in January 1996. In March 1996 the CCMS adopted the terms of reference for the study developed in Aachen and appointed Mr. Kurt M. Lietzmann (German Federal Ministry for Environment, Nature Conservation and Nuclear Safety) and Mr. Gary D. Vest (Principal Assistant Deputy Under Secretary for Environmental Security, USDoD) as Pilot Study Co-Directors. The study was then opened to participants from partner countries. As a first step in the working schedule, representatives from the Alliance and EAPC countries attended the first Plenary Meeting in Waldbröl in April 1996, hosted by the Federal Armed Forces Office for Studies and Exercises (FAFORSE), Germany, and co-chaired by the Pilot Study Directors. At this first Pilot Study Plenary Meeting, the mandate to elaborate an outline for the Pilot Study (including the overall methodology and terms of reference) was developed. At the same time and throughout the whole Pilot Study, the NATO/CCMS National Coordinators and Secretaries were frequently informed and updated as to the progress of the study.

The second Pilot Study Plenary Meeting took place in Ankara, Turkey in November 1996 and was hosted by the Scientific and Technical Research Council of Turkey (TÜBITAK). Before this Plenary Meeting, Ecologic and Evidence Based Research (EBR) prepared an Interim Report entitled "Environment and Security in an International Context: State of the Art and Perspectives," describing the conceptual framework for the future framework of the Pilot Study.[7] During this second Plenary Meeting, this Interim Report was presented and accepted. Based on the Interim Report, the outline of the Pilot Study was adopted and three subgroups which reflect the structure of the study, were established. The three subgroups of the Pilot Study were structured according to topic areas and conducted under the leadership of a subgroup chair. The subgroups are as follows:

- Subgroup 1: "Definition and Modeling" dealt in particular with the development of a concept for the issues of environment and security. The overall aim of Subgroup 1 was to clarify the non-linear relationship between environmental stress, the consequences of environmental stress, contextual factors, and security as well as to develop a typology of cases.

- Subgroup 2: "Definition and Development of a Database and a Decision Support System," looked at providing decision support for policymakers by compiling relevant data on environment and security which can serve as a knowledge base for policy making. Subgroup 2 also compiled information on developing environmental indicators to be integrated into early warning systems.
- Subgroup 3: "Policy Responses," examined the potential contribution to the incidence or escalation of conflict from different environmental stresses and identified in different geographic regions of importance which may be at risk and developed preventive and remedial policy responses in the

Pilot Study Proceedings

During Subgroup Workshops, papers were provided by both participants and external experts as a contribution to the Pilot Study. The first Subgroup 1 meeting was held in Washington DC in January 1997 hosted by Mr. Gary Vest and Dr. Brian Shaw (Center for Environmental Security, Pacific Northwest National Laboratory), where the working plan for this subgroup was developed.

All three subgroups met at a third Plenary Meeting held in Carlisle, PA, USA in May 1997, which was hosted by Mr. Gary Vest, Dr. Kent Butts (Center for Strategic Studies, US Army War College), Dr. Brian Shaw (Center for Environmental Security, Pacific Northwest National Laboratory), and co-chaired by the Pilot Study Directors. The purpose of the meeting was to review the working results of the subgroups, approve a structure for the final report of the study, and develop the schedule for continuing work on the Pilot Study. On this basis, the following expert meetings were held to further discuss the topics areas of each subgroups.

From 16-17 October 1997, a workshop for Subgroup 2 entitled "Definition and Development of a Database and a Decision Support System" was hosted by Mr. Petr Kozel (Ministry of Defence of the Czech Republic) in Prague, Czech Republic and directed by Professor Dr. Bedrich Moldan (Director of the Environmental Center, Charles University, Prague). This workshop focussed on the discussion of indicators for environment and security as well as databases and decision support systems.

In Warsaw on 20-22 October 1997, a workshop for Subgroup 1 entitled "Security Implications on Environmental Issues" dealing with the analytical relationship between environment and security was hosted and directed jointly by Dr. Gunnar Arbman (National Defence Research Establishment, Sweden) and Mr. Stanislaw Wilczkowiak (Ministry of Environmental Protection, Poland) in Poland.

In Geneva from 9-11 February 1998, a workshop for Subgroup 1 entitled "Highlighting the Relationship Between Serious Conflicts and Environmental Transformation" focusing on developing mechanisms for a threat assessment of environment and security was hosted by Mrs. Eva Affolter Svenonius (Swiss Agency for the Environment, Forests, and Landscape) in Switzerland.

In Vienna on 23-24 March 1998, a workshop for Subgroup 3 entitled "Environment and Security in an International Context: Environmental and Developmental Policy Responses" was hosted by the Federal Ministry for the Environment, Youth, and Family Affairs, Republic of Austria and co-chaired by Ambassador Irene Freudenschuss-Reichl and Professor Gerhard Loibl. Back to back with this meeting, Austria hosted the fourth Plenary meeting, where the interim results from the subgroups were discussed and the editing process for the draft final report was coordinated.

In Paris from 27-28 April 1998, a workshop for Subgroup 3 entitled "Selected Foreign and Security Policy Responses" focussing on the development of foreign and security policy responses was hosted by the Secretariat General for National Defence (SGDN) in co-operation with the Ministry of Foreign Affairs and with the support of CREST and directed by Ambassador Berengere Quincy, (formerly representing the French Secretariat General for National Defence (SGDN).

The results of these workshops were compiled into a draft Pilot Study Full Technical Report by Ecologic in June 1998. An editing meeting was held in Washington DC in July 1998 and hosted by EBR. Detailed editing work was completed by the editing group which resulted not only in changes in terminology, but clarified the concepts and terms used. The draft Full Technical Report was then distributed to participants of the Pilot Study and to selected peer reviewers and external experts.

The second and final editing meeting took place in November 1998 in Berlin, Germany hosted by Ecologic and chaired by Pilot Study Director, Kurt Lietzmann. During this second editing meeting, detailed comments received from both the Pilot Study participants and the selected peer reviewers were discussed in full as to how the Pilot Study Full Technical Report could be enhanced or improved. The editing group diligently worked on the draft of the Executive Summary Report as well. The remaining editing schedule was finalized and it was agreed that Ecologic would provide the final analysis and editing for the Full Technical Report and Executive Summary.

The Final Pilot Study Plenary meeting was held on 13-14 January 1999 in Vancouver, Canada and hosted by Mr. Anthony T. Downs, Director-General Environment, Department of National Defence, Canada. The final meeting was attended by a large number of participants where the final comments and recommendations were discussed in-depth. Following this discussion, an approval by consensus was reached on the Full Technical Report and the Executive Summary.

areas of environmental, development, foreign, and security policy.

Importance of the Pilot Study

The Pilot Study's final product compiles existing state of the art research on the relationship between environmental change and security. At the same time, a large part of the Pilot Study's work is dedicated to developing parameters for response mechanisms directed towards political stakeholders from different policy sectors. The focus of these responses is on reducing the potential incidence or escalation of conflict, inter alia, enhancing security at the earliest possible stage. The structure of the pilot study reflects this orientation towards framing practical action. Another characteristic of this Pilot Study is that it deals with a broad social science issue discussing innovative policy responses for dealing with environmental stress and its potential effects on security.

Starting from Article 2 of the North Atlantic Treaty, which provides that parties will contribute towards the further development of peaceful and friendly international relations by promoting conditions of stability and well-being, this Pilot Study responds to the aim evolving from the 1991 Declaration on Peace and Co-operation, which defined its tasks to further evolve its partnership with countries in Central and Eastern Europe. Its results need to be interpreted under the umbrella of the Strategic Concept for the 21st Century which will be adopted at the Washington DC NATO Summit in April 1999.

Today's broadened security challenges differ from the traditional ones in their expanded geographical reach. Therefore the results of the study are relevant for a larger audience, including other international organizations. As a result, this Pilot Study integrated other international organizations in its work with participation by representatives of the United Nations Development Programme and Environmental Programme, UN Economic Commission for Europe (UNECE), Organization for Security and Cooperation in Europe (OSCE), Organization for Economic Cooperation and Development (OECD) and the World Bank. This new approach follows the principle of integrating different policy sectors at the international level.

The Pilot Study also involved a wide range of experts from different fields and institutes. Policymakers, researchers, diplomats, and representatives of NGOs covering various policy areas, participated in the study by adding their respective expertise to address the topic of environment and security. The study benefited from the different insights drawn from the fields of environmental policy and research, conflict research and security studies, and development and foreign policy.

Pilot Study Findings

Presented in this section are the Pilot Study's main findings

Key Findings: *NATO Security Context*

* Although nations continue to be central actors in international politics, they increasingly participate in a multitude of international regimes and institutions. Nations are engaging in co-operation with international and regional organizations to respond to non-traditional security concerns including the environment.
* The North Atlantic Treaty recognized from its beginning that security is not entirely a function of military power or geopolitical strength. It recognizes the need to include an economic, and to a lesser extent, a social dimension to its conception of security (see Art. 2 of the Treaty). This civil security dimension is given an institutional framework through the NATO Committee on the Challenges of Modern Society (CCMS).
* Since the end of the Cold War, NATO looks increasingly at threats from non-traditional sources and addresses Alliance security in an expanded regional and global context. This new and broader security concept—the Strategic Concept of 1991—complements the emphasis on the defense dimension of security and recognizes that security and stability have political, economic, social and environmental elements.
* The broad approach to security is reflected in three mutually reinforcing elements of Alliance security policy: dialogue, co-operation and collective defense. These elements should support NATO in remaining flexible and responsive to changing security conditions, so that its important role in the new security context can be guaranteed for the future.
* The most serious impacts of environmental stress, due to transboundary effects, are likely to emerge in regions other than the Euro-Atlantic region, such as developing countries and countries in transition. Preventing the breakdown of global systems is a high policy priority for a number of states and the environment is understood as one of these global systems.
* With reference to Article 4 of the North Atlantic Treaty, any issue can be brought before the Alliance for the purpose of consultation with other Member States when one Member State perceives the territorial integrity, political independence or security of any of the Member States is threatened. This could conceivably include an environmental issue.
* As NATO provides the available fora for consultation and co-operation, to include EAPC and the PfP, environmental issues with security implications for Member States and Partner Countries can be addressed or resolved in the same fashion. This includes the development and co-ordination of data sharing and exchange arrangements for regional monitoring networks. Beyond data collection and monitoring, NATO will have to rely on co-operation with other respective organizations for preventive action.
* The broad understanding of security increases the need for more co-operation among regional and international security institutions, such as WEU, OSCE, and UN as well as between security institutions and institutions in other policy areas such as environment, development and foreign and security policy.

and policy responses. The findings from the Full Technical Report will be presented in this section according to the structure of the relevant chapters from the Pilot Study. In the Full Technical Report, the study is divided into the following chapters:

- Chapter 1: NATO Security Context (provides an overview of the North Atlantic Treaty, CCMS, and the Changing Security Context);
- Chapter 2: Assessing the Links between Environment and Security (clarifies the concepts between environmental stress and security; examines the consequences of environmental stress and their potential impact on the incidence or escalation of conflict; discusses contextual factors which may impact the consequences of environmental stress);
- Chapter 3: Typology of Environmental Conflict Cases (describes further the relevance of environmental stress, socio-economic conditions, contextual factors, and conflict; exhibits the results of empirical research including historical cases and inductively derived case studies);
- Chapter 4: Integrated Risk Assessment (analyses and compares the conflict potential or security risk of specific unfavorable socio-ecological patterns; identifies regions that are affected by environmental stress factors or syndromes);
- Chapter 5: Indicators, Data and Decision Support Systems (presents a set of practical options to support policymakers for the development of early warning indicator systems, data bases, and decision support systems);
- Chapter 6: Policy Responses (presents an integrated approach of all policy areas and policy responses for environmental, development, foreign and security policy).

Chapter 1: NATO Security Context

At the threshold of the 21st Century, societies are facing non-traditional threats to security such as economic decline, social and political instability, ethnic rivalries and territorial disputes, international terrorism, money laundering, drug trafficking, and environmental stress. The regions most likely to experience the potential incidence or escalation of conflict fall outside of the Euro-Atlantic region in developing countries or countries in transition. Preventing the breakdown of global systems is a high policy priority for a number of states and the environment is understood as one of these global systems.

These security concerns are redefining the traditional missions of security organizations including NATO. The North Atlantic Treaty recognized from the beginning that security is not entirely a function of military power or geopolitical strength. It recognizes the need to include an economic, and to a lesser extent, a social dimension to its conception of security (see Article 2 of North Atlantic Treaty). This civil security dimension is given an institutional framework through the NATO Committee on the Challenges of Modern Society (CCMS).

Since the end of the Cold War, NATO looks increasingly at threats from non-traditional sources and addresses Alliance security in a broader context. This context is expanded by the Strategic Concept of 1991 which complements the emphasis on the defense dimension of security and recognizes that security and stability have political, economic, social, and environmental elements. Part of this changing security context is that nations, although still central actors in international politics, increasingly participate in a multitude of international regimes and institutions. Nations are engaging in co-operation with international and regional organizations to respond to non-traditional security concerns including the environment. With reference to Article 4 of the North Atlantic Treaty, any issue can be brought before the Alliance for the purpose of consultation with other Member States when one Member State perceives the territorial integrity, political independence or security of any of the Member States is threatened. This could conceivably include an environmental issue.

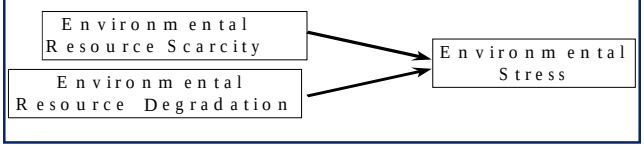
Within the NATO Framework, the broad approach to security is reflected in three mutually reinforcing elements of Alliance security policy: dialogue, co-operation, and collective defense. These elements should support NATO's flexibility and responsiveness to changing security conditions, so that its important role in the new security context can be guaranteed for the future. As NATO provides the available fora for consultation and co-operation, to include the Euro-Atlantic Partnership Council (EAPC) and the Partnership for Peace (PfP) countries, environmental issues with security implications for Member States and Partner Countries can be addressed or resolved in the same fashion. This includes the development and co-ordination of data sharing and exchange arrangements for regional monitoring networks. Beyond data collection and monitoring, NATO will have to rely on co-operation with other organizations for preventive action. This will call for more co-operation among regional and international security institutions, such as the Western European Union (WEU), Organization for Security and Co-operation in Europe (OSCE), and the United Nations (UN) as well as between security institutions and institutions in other policy areas such as environmental, development, foreign and security policy.

Chapter 2: Assessing the Links between Environment and Security

The relationship between environmental change and security has been of increasing importance in recent years in both the scientific and policy communities as new challenges to security emerge in the post-Cold War context. In consideration of the complexity of the causal pathways of the relationship between environmental change and security, this section lays the foundation, elaborating on the relationship between environmental stress, its political, economic, social, and demographic consequences and their impact on security by interpreting the current available literature.

We conceive of environmental change in terms of the nature and extent of environmental stress. We define the independent variable, environmental stress, as the scarcity and

Figure 2.1 - Environmental Stress



environmental degradation of natural, renewable resources (quantitative and qualitative resource degradation). As both factors are closely interconnected - environmental degradation can increase scarcity and scarcity can further degrade a resource by overexploitation - they are considered as one variable in the context of the Pilot Study (see figure 2. 1 on previous page).

The understanding of security in our Pilot Study analysis generally includes the integrity of national territory, protection of political independence and national sovereignty, and stability at the international political level. The inverse of these conditions can be characterized by our operationalized dependent variable, the potential incidence or escalation of conflict. Conflicts are understood as dynamic processes with different levels of intensity along a continuum ranging from highly co-operative to highly conflictual situations (durable peace, stable peace, unstable peace, crisis, war) (see figure 2. 2).

This conflict dynamic suggests that issues can be resolved before conflict develops into a security threat. Countless issues of conflict, particularly at the local or regional level, are resolved co-operatively; only a limited number of conflicts reach a higher conflict intensity. The figure also depicts the notion that violence is by no means the automatic outcome of conflict.

The relationship between environmental stress and conflict is characterized by:

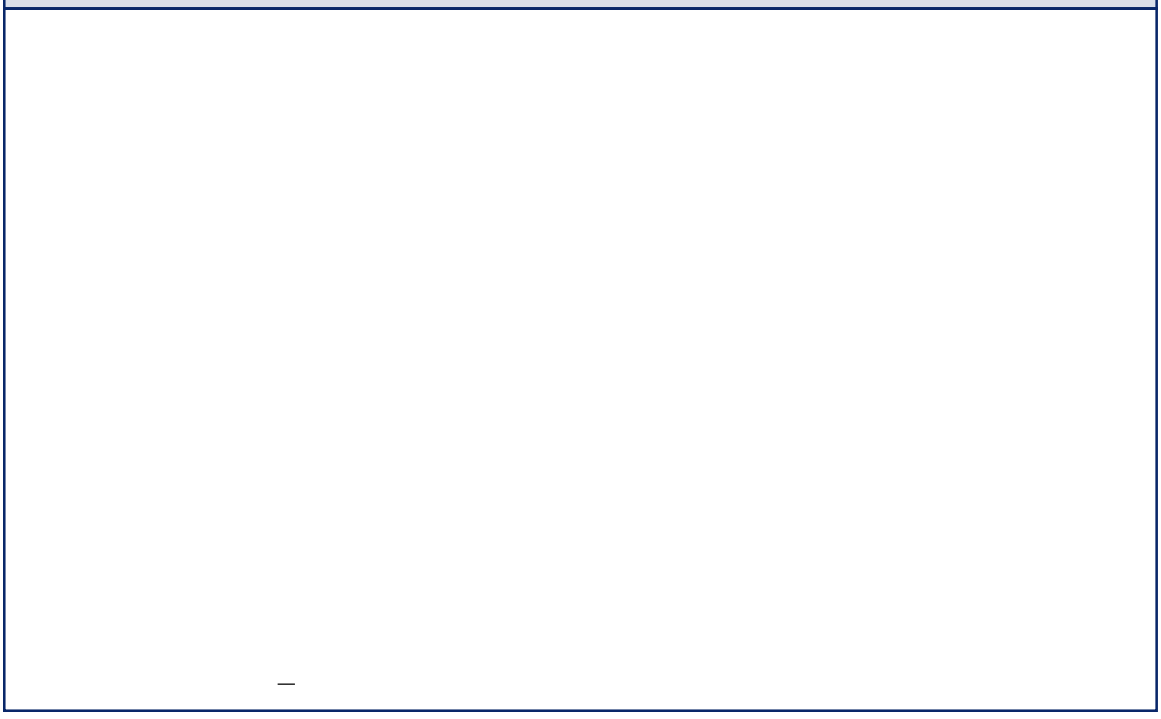
- Multi-causality: environmental stress contributing to conflict almost always interacts with other political, social, and economic factors and evolves through various stages before it results in conflict;
- Reciprocity and feedback loops: the relationship between environmental stress and conflict is recursive; just as environmental stress can lead to conflict under unfavorable contextual factors, conflict can lead to more environmental stress;

Key Findings: ***Assessing the Links between Environment and Security***

- Environmental stress comprises scarcity of natural, renewable resources (quantitative degradation) as well as qualitative resource degradation. As both factors are closely interconnected—environmental degradation can increase scarcity as well as scarcity can further degrade a resource by overexploitation—they are considered as one variable in the context of the Pilot Study.
- Conflict is understood as a dynamic process with different levels of intensity along a continuum ranging from highly co-operative to highly conflicted situations (durable peace, stable peace, unstable peace, crisis, war).
- Violence is by no means the automatic outcome of conflict. Countless issues of conflict, particularly at the local or regional level are resolved co-operatively; only a limited number of conflicts reach a higher conflict intensity.
- The relationship between environmental stress and conflict is characterized by:
  - Multi-causality: environmental stress contributing to conflict almost always interact with other political, social, and economic factors and evolves through various multi-stages before it results in conflict;
  - Reciprocity and feedback loops: the relationship between environmental stress and conflict is recursive, because just as

...continued on following page

Figure 2.2 - Conflict Dynamic



- Consequences of environmental stress: poverty, food insecurity, poor health conditions, displacement, migration or refugee movements, and disruption of the social and political institutions are regarded as the most important consequences of environmental stress, which then contribute to conflict under a certain set of unfavorable contextual factors.

Environmental stress can also play different roles along the conflict dynamic. It can be a:

- Structural source of conflict: environmental stress is perceived as a permanent factor affecting the interests and preferences of the actors involved;
- Catalyst for conflict: environmental stress is further exacerbated by an existing unstable socio-economic situation and the resulting impacts are the increase in the potential incidence or escalation of conflict;
- Trigger for conflict: environmental stress instigates conflict when underlying causes for conflict are perceived as acute threats to a group's interests due to an unfavorable, sudden change in the environmental sphere.

Key Findings: *Assessing the Links between Environment and Security*
-continued-

environmental stress can lead to conflict under unfavorable contextual factors, conflict can lead to more environmental stress;
- Consequences of environmental stress: poverty, food insecurity, poor health conditions, displacement, (migration or refugee movements), and disruption of the social and political institutions are regarded as the most important consequences from environmental stress, which then contribute to conflict under a certain set of unfavorable contextual factors.

- Environmental stress can play different roles along the conflict dynamic. It can be a: structural source as well as a catalyst for conflict or a trigger for conflict.
- Similar types of environmental stress may have different effects on the incidence of violence. Therefore the socio-economic and political context, in which environmental stress occurs, has to be taken into consideration while assessing the conflict potential of different environmental stress. These contextual factors identified comprise patterns of perception, economic vulnerability and resource dependency, institutional, socio-economic and technological capacity, cultural and ethno-political factors, violence-potential, and internal security structures, political stability, participation, international interaction, and mechanisms of conflict resolution.

Similar types of environmental stress may have different effects on security. Therefore the socio-economic and political context in which environmental stress occurs has to be taken into consideration when assessing the conflict potential of different types of environmental stress. Figure 2. 3 shows that contextual factors influence whether environmental change causes social, economic, and political and demographic consequences, which in turn impact on security. The contextual factors influence the process at a very early stage and vary accordingly to the different environmental stress conditions characterized within a country. Contextual factors have either a facilitating or inhibiting effect on the relationship between environmental stress and conflict. Relating back to our original hypothesis on the relationship between environmental change and security we have developed the

Figure 2.3 - Conceptual Model: Relationship Between Environmental Change and Security

following conceptual model (see figure 2. 3).

The contextual factors identified are as follows:

- Patterns of perception: Whether or not environmental stress contributes to the potential incidence or escalation of conflict depends heavily upon the perceptions of the actors. For example, if environmental stress is perceived as directly impacting on an actor's interests and priorities, including threats to their physical or economic well-being, actors are more willing to escalate the conflict.
- Economic vulnerability and resource dependency: Economic vulnerability and resource dependency differ enormously among countries, but also among regions or social groups. The vulnerability caused by dependence on a degrading resource—such as fresh water—may enhance the probability of the incidence of conflict. Migration or flight are often the result of extreme dependence on a degrading resource, causing socio-economic and political stress in the receiving nation or state.
- Institutional, socio-economic and technological capacity: Institutional capacity of a government is a precondition for co-operative action on environmental stresses and their consequences. Socio-economic and technological capacities of a society and a government are further requirements for the reduction of environmental stress and the amelioration of its negative consequences.
- Cultural and ethno-political factors: The existence of ethnic, cultural or religious differences do not in themselves lead to conflict, but they can contribute to the incidence or escalation of conflict if they develop into a political problem. These differences may be exacerbated by an inequitable distribution of wealth, services or access.
- Violence-potential and internal security structures: The incidence of conflict or the escalation to violence may be determined in part by the degree of civilian control of the military, the internal security services and law enforcement agencies. If these democratic structures do not exist, and these institutions are dominated and potentially instrumentalized by a certain group in the society, they might be used as a tool to resolve potential conflicts by force.
- Political stability: Social and economic factors are closely inter-linked with the political dimension of the state. Instability exists when the political system and the government are unable to effectively control tensions between different groups in the society or between the government and the opposition.
- Participation: Empirical research on cases of environmental stress has shown that in many instances local groups who were directly affected by the decision, for example the exploitation of a resource, and who were not involved in the decision-making process, had a low acceptance rate of the decision itself. Participation can be realized through mechanisms such as free and fair elections, petitions, or it can be realized through traditional or culturally specific mechanisms.
- International interaction: The constructive engagement of a country in international interactions enhances co-operative resolution of the negative consequences of environmental stress. It encourages a state to adhere to international environmental treaties and encourages it at the same time to comply to international regimes, to adjust to international standards.
- Mechanisms of conflict resolution: The presence of effective and legitimate legal, political and social mechanisms of conflict resolution enhances the possibility of resolving conflict within a state or between states. In participatory societies countless and sometimes serious environmental conflicts are resolved by legal, political, and social mechanisms, where negotiation, compromise and mediation play a central role.

Chapter 3: Typology of Environmental Conflict Cases

To further illustrate the relevance of the conceptual framework presented in Chapter 2, the results of empirical research, including historical case studies in which environmental stress influenced the onset of conflict, are presented in this chapter. These cases are categorized and placed into a typology to further assist decision makers and policy analysts in understanding the relationship between environmental stress and security. A typology of environmental conflict developed in the context of this Pilot Study reflects the complexity of the relationship between environmental stress and its consequences, contextual factors and actors. This

Key Findings: *Typology of Environmental Conflict Cases*

A typology of environmental conflict developed in the context of the Pilot Study reflects the complexity of the relationship between environmental stress, its consequences and contextual factors as well as actors. This typology can be understood as a research hypothesis, subject to further testing since the grouping of cases used were derived inductively.

- Cases where environmental stress heightens the potential incidence of conflict generally manifest themselves in developing or transitional societies in socio-economic crisis. These conflicts can typically occur at the local or regional levels where marginalization or discrimination of one or more actors is common.
- Four general types of environmental conflict can be identified which fulfil the complexity requirements of a typology: ethno-political conflicts; migration conflicts (internal, cross border, demographically caused migration); international resource conflicts; and environmental conflicts due to global environmental change.
- According to this typology of environmental conflicts, there are many cases that have been solved without violence, demonstrating that there is a large potential for local, regional and international co-operation in the various policy arenas.

typology [based primarily on the Environmental Conflicts Project (ENCOP)] can be understood as a research hypothesis, subject to further testing since the grouping of cases used were derived inductively.

According to the ENCOP categories and typology, it has been found that cases where environmental stress heightens the potential incidence of conflict were generally manifest in developing or transitional societies in socio-economic crisis. These conflicts can typically occur at the local or regional levels where commonly there is a marginalization or discrimination of one or more actors. Four general types of environmental conflict can be identified which fulfil the complexity requirements of a typology:

- Ethno-political conflicts are characterized by a coincidence of environmental and ethnic discrimination. Conflicts may emerge when two or more ethnic groups share one eco-region suffering from environmental stress and have limited access to the needed natural resources. Conflicts may also emerge when ethnic groups depend on neighboring eco-regions with highly distinct degrees of productivity. Violence may occur if and when the environmentally discriminated group invades another territory.
- Migration conflicts are either based on internal migration, cross-border migration or have a strong demographic component.
  - Internal migration conflicts are triggered by voluntary migration or forced displacement of inhabitants from one region to another within one country. The geographic origin of migrants or displaced persons is the primary criterion for conflicting social and political relationships between the actors. Migration is induced by structural changes such as persistent drought, flood, and soil erosion (desertification) or forced displacement and expulsion in connection with large unsustainable industrial projects, mineral extraction, dam projects and forestry.
  - Cross border migration conflicts are in general characterized by the same causes as internal migration conflict. When migrants or refugees cross national borders voluntarily, resettle in rural border areas or resettle in cities of a third country, they represent socially and at times a source of political conflict potential.
  - Demographically caused migration conflicts are characterized by high population pressure in eco-regions of low productivity leading to migration either to more favorable economic or to remote natural areas. They are likely to escalate when migrants compete with other groups for scarce resources.
- International resource conflicts are characterized by distribution problems. They are caused by an asymmetrical dependence on the quantity and quality of a resource, for example fresh water or fish stocks. The likelihood of violent escalation of international resource conflicts depends heavily on the specific constellation of contextual factors. Under favorable contextual factors, these conflicts may be resolved co-operatively.
- Consequences of global environmental change have not resulted in violent conflict thus far. However, the implementation of specific international environmental agreements has lead to tensions between nations in a number of areas.

According to this typology of environmental conflicts, there are many cases that have been resolved without violence, demonstrating that there is a large potential for local, regional and international co-operation in the various policy areas.

Chapter 4: Integrated Risk Assessment

This section on integrated risk assessment establishes guidelines for assessing and prioritizing the potential impact of different types of environmental change on security. Here, we assess the risk of increasing the potential incidence or escalation of conflict. The assessment is termed integrated because of the broad range of factors that are considered (political, economic, social, demographic, and environmental factors). Chapter 2 established that environmental stress may generate a series of consequences (political, economic, social and demographic) and that those consequences impact on the potential incidence or escalation of conflict. This relationship might be further influenced by a series of structural or contextual factors.

The nature of the relationship between environmental stress and security is indirect and multi-causal. Environmental stress

Key Findings: *Integrated Risk Assessment*

- The nature of the relationship between environmental stress and security is indirect and multi-casual. Environmental stress can be prioritized according to time of impact, geographic area effected and magnitude of stress.
- The consequences of environmental stress (political, economic, social, and demographic) tend to be highly inter-related and the integrated risk assessment needs to address those relationships in assessing them.
- The complexity of the relationship between the consequences of environmental stress and the potential incidence or escalation of conflict is best controlled through the use of pattern matching; The Syndrome Approach of the German Government's Advisory Council on Global Change provides a set of experimental hypotheses as templates for pattern matching.
- The syndrome-based risk assessment is one approach that can help in identifying priorities for the development of early warning indicators and preventive action.
- Some preliminary research findings suggest that certain syndromes are more prone than others to the onset or escalation of conflict.
- Further development of the syndrome approach is also required to enable researchers, development practitioners and politicians alike, to more effectively concentrate on critical regions and critical interdependencies in the future.

can be prioritized according to time of impact, geographic area affected and magnitude of stress. The integrated risk assessment needs to control or manage the complexity in the relationship between the consequences of stress and contextual factors in order to determine which factors have the most potential impact on the incidence or escalation of conflict. The complexity of this relationship is best controlled through the use of pattern matching. The Syndrome Approach developed by the German Government's Advisory Council on Global Change (WBGU) and the Potsdam-Institute for Climate Impact Research (PIK), provides a set of experimental hypotheses as templates for pattern matching which help to control for complexity in the integrated risk assessment.

The Syndrome Approach provides a number of identifiable patterns of environmental stress. Identifying the potential set of consequences and their pattern of interaction in the context of a specific set of variables may allow for a broader set of potential responses for policymakers. The syndrome-based concept starts from the assumption that environmental stress is part of a dynamic human-nature interaction. The Syndrome Approach identifies different types of these interactions which occur in various environmental, administrative or geopolitical regions of the world. The overall importance of the syndrome-based approach for policymakers is that it may serve as a promising starting point for the development of indicators for early intervention in the conflict dynamic and may provide the opportunity to reduce the potential incidence of conflict or its escalation in specific cases. There are sixteen syndromes (see Table 4. 1) almost all of which are experimental hypotheses and are divided into the three subgroups 'resource use', 'development', and 'sinks'.

A fully functional integrated risk assessment approach must correlate these syndromes with the potential for conflict. Some preliminary research findings suggest that certain syndromes are more prone than others to the onset or escalation of conflict. Additional empirical testing in this area is likely to confirm meaningful relationships between particular syndromes and conflict potential. This can be translated into a practical integrated risk assessment tool for policymakers to let them know when, where and how a syndrome might lead to conflict. Further development of the Syndrome Approach is also required to enable researchers, development practitioners and politicians alike, to more effectively concentrate on critical regions and interdependencies in the future.

Chapter 5: Indicators, Data, and Decision Support Systems

Much of the research findings in this Pilot Study suggest that the development of early warning indicator systems, data bases and decision support systems are feasible and warranted. Although the development of practical approaches could not be finalized in this Pilot Study, further research is required to specify, focus and simplify research results so that they can be useful directly for policymakers. This chapter presents a set of options, grounded in existing research, that offer practical solutions to support policymakers.

Table 4.1 Overview of Global Change Syndromes

Utilization Syndromes	
1. *Sahel Syndrome*	Over-cultivation of marginal la
2. *Overexploitation Syndrome*	Overexploitation of natural eco
3. *Rural Exodus Syndrome*	Environmental degradation thr agricultural practices
4. *Dust Bowl Syndrome*	Non-sustainable agro-industrial
5. *Katanga Syndrome*	Environmental degradation due non-renewable resources
6. *Mass Tourism Syndrome*	Development and destruction o
7. *Scorched Earth Syndrome*	Environmental destruction thro
Development Syndromes	
8. *Aral Sea Syndrome*	Environmental damage of natu of large-scale projects
9. *Green Revolution Syndrome*	Environmental degradation thr inappropriate farming methods
10. *Asian Tigers Syndrome*	Disregard for environmental sta rapid economic growth
11. *Favela Syndrome*	Environmental degradation thr
12. *Urban Sprawl Syndrome*	Destruction of landscapes throu of urban infrastructures
13. *Major Accident Syndrome*	Anthropogenic environmental c
Sink Syndromes	
14. *Smokestack Syndrome*	Environmental degradation thr diffusion of long-living substan
15. *Waste Dumping Syndrome*	Environmental degradation thr uncontrolled disposal of waste
16. *Contaminated Land Syndrome*	Local contamination of environ

Key Findings: *Indicators, Data, and Decision Support Systems*

- Existing research findings in the environment and security field can provide useful direction for the design of early warning indicator systems and decision support systems. Further research is required to specify, focus and simplify research results so that they can be useful directly for policymakers.
- It is recommended that tracking and monitoring environmental and contextual indicators are essential in order to assist analysts in forecasting the potential incidence of conflict and to determine the potential of existing conflicts to escalate along the conflict continuum. The contextual indicators are critical in forecasting which environmental stresses are likely to produce conflictual outcomes.
- To be useful for early warning, indicator systems must provide indication of critical problems and thresholds at very early stages, when it is still possible to avert future instability. Warning indicators generally refer to anticipated environmental stress; contextual factors associated with environmental stress; and, consequences of environmental stress.
- It is preferable to focus on indicators that reveal levels of anticipated environmental stress.
- When sustainable development indicators are stressed beyond certain thresholds or reference values, they are likely to lead to unsustainable policies and practices and be potential contributors to conflict. Reference values identify the thresholds at which changes over time in environmental indicators are transformed from being beneficial or neutral to being negative or risk-provoking along some dimension. These values are regionally or systemically specific and they may change over time.
- Reference values can be conceived in three ways: based entirely on scientific evidence; based on policy targets, usually scientific evidence in the context of national economic capability, technological capacity, or political will; and based in terms of public perception.
- Due to the large number of indicators available, more research is needed to reduce these indicators to a number more manageable for policy support. In order to be useful for policy makers, indicators should be readily understandable and interpretable. There are two approaches to controlling for indicator complexity: development of a single index by statistically or mathematically aggregating multiple indicators; and development of "marker indicators" through the selection of a small number of indicators from a much larger pool which correlate strongly with particular concepts.
- Simple and practical decision support systems can be developed to provide early warning to policymakers using existing data resources. They should be oriented toward providing early warning of the potential for conflict.
- Decision support systems should be capable of evaluating how particular environmental problems are affected by contextual factors that may facilitate or exacerbate their potential impact on the incidence or escalation of conflict. They should be able to provide useful analysis and recommended responses at different stages of the conflict dynamic.

First, it is recommended that tracking and monitoring a large number of environmental and contextual indicators are essential in order to assist analysts in forecasting the potential incidence of conflict and to determine the potential of existing conflicts escalating along the conflict continuum. The contextual indicators are critical in forecasting which environmental stresses are likely to produce conflictual outcomes.

Second, to be useful for early warning, indicator systems must provide an indication of critical problems and thresholds at very early stages, when it is still possible to avert future instability. It is preferable to focus on indicators that reveal levels of anticipated environmental stress. Warning indicators generally refer to anticipated environmental stress, contextual factors associated with environmental stress, and consequences of environmental stress.

Third, when sustainable development indicators are stressed beyond certain thresholds or reference values, they are likely to lead to unsustainability and be potential contributors to conflict. Reference values identify the thresholds at which changes over time in environmental indicators are transformed from being beneficial or neutral to being negative or risk-provoking along some dimension. These values are regionally or systematically specific and they may change over time. Reference values can be conceived in three ways: based entirely on scientific evidence, based on policy targets, usually scientific evidence in the context of national economic capability, technological capacity, or political will, and based in terms of public perception.

Fourth, due to the large number of indicators available, more research is needed to reduce these indicators to a more manageable number for policy support. In order to be useful for policymakers, indicators should be readily understandable and interpretable. There are two approaches for controlling indicator complexity: development of a single index by statistically or mathematically aggregating multiple indicators, and development of "marker indicators" through the selection of a small number of indicators from a much larger pool which correlate strongly with particular concepts.

Finally, simple and practical decision support systems can be developed to provide early warning to policy makers using existing data resources. They should be oriented toward providing early warning of the potential for conflict. Decision support systems should be capable of evaluating how particular environmental problems are affected by contextual factors that may facilitate or exacerbate their potential impact on the incidence or escalation of conflict. They should be able to provide useful analysis and recommend responses at different stages of the conflict dynamic.

Chapter 6: Policy Responses

The previous chapters identified the complex inter-linkages between environmental stress and the potential

incidence or escalation of conflict. The multitude of socio-economic and political factors influencing environmental conflict and the different manifestations of conflict call for a co-operative and integrative approach towards the prevention of environmental conflict and its peaceful resolution. This approach must integrate response mechanisms from the environment and development policy and from the foreign and security policy sector. Within this section, policy recommendations which share the principles of sustainable development, precaution, integration, and co-operation are suggested for further action.

Based on their comparative advantages, each policy sector can contribute, with its specific problem-solving mechanisms and instruments, to the prevention or management of the incidence or escalation of conflict at different geographic levels and different stages of the conflict dynamic. Since environmental stress often contains the seeds for both conflict and co-operation, it is suggested that all actors integrate the conflict dimension into their thinking and policy mechanisms and to mutually co-ordinate their response mechanisms. Co-operation on shared environmental issues can establish lines of communication that may be valuable in reducing regional tensions on non-environmental problems. As the global commons cannot be managed by any nation state alone, co-operation of governmental and non-governmental actors at the different levels has to be enhanced in preventing and managing environmental conflict.

Environmental Policy Key Findings

- Environmental stress poses a potential threat to security at all geographic levels, and can have consequences across a range of levels, such as global environmental stresses which may raise the potential incidence and escalation of conflict at the local and regional levels. Taking preventive action on environmental stress thus is the most appropriate approach to preventing environmental conflicts. Such preventive action is needed at all levels, but given that environmental stresses tend to be rooted in transboundary, regional and global environmental problems, international and regional environmental agreements play a particularly important role in preventing environmental conflict.
- Environmental policy at the national level and through international institutions has achieved a remarkable record of progress in the last two decades (e. g. air pollution abatement, protection of the ozone layer). In addition to their role in promoting a better environment, co-operative environmental institutions have contributed to confidence building and to avoiding conflict escalation between countries (e. g. management of river basins). However, a number of environmental challenges have grown in importance and the security relevance of environmental stress has increased. Efforts to address environmental stress, its consequences, and their impact on the potential incidence or escalation of conflict thus need to be intensified.
- In addition to improving the common knowledge base of policy-making on the relationship between environment and security, comprehensive assessment mechanisms need to be developed which take the environmental impacts of policies into account. They should also be extended to assess socio-economic impacts of environmental stresses on social, political, and economic conditions and on security. These comprehensive assessment mechanisms should be institutionalized and used at all levels of decision-making as a standard operating procedure for integrating environmental considerations and security concerns of environmental change that will include the modification or abandonment of projects, programs or policies. Other policy areas such as transport, agriculture, energy, social, and security policies need to make further progress in taking a long-term perspective and internalize external costs.
- There is great need for strengthening, re-examining, and reforming the international institutional framework, especially in a regional context. This relates in particular to natural resource regimes, international environmental law, and the role of UN institutions. Efforts should be intensified, particularly in regional contexts, to codify rules for the management of natural resources and especially shared water resources. Existing agreements, e. g. to combat desertification and manage the use of resources, should be strengthened.
- To benefit fully from international and regional environmental agreements, they must be ratified, implemented and enforced effectively. To improve implementation, the transfer of knowledge and technology should be enhanced, and existing mechanisms for capacity building strengthened. International financing must be made available and innovative implementation instruments, including market-based instruments such as emissions trading and joint implementation and common policies and measures, further explored and properly applied.
- Strengthened verification and compliance mechanisms, possibly including binding consequences and penalties in cases of non-compliance, can enhance mutual trust and confidence among parties to international environmental agreements. Efforts are also needed to foster mechanisms for amicable dispute resolution, especially in resource regimes. In this context, existing dispute settlement procedures (International Court of Justice, World Trade Organization) as well as other innovative approaches deserve consideration.
- Decision-making in international institutions needs to be facilitated. This can, inter alia, be achieved through an increased use of innovative procedures of majority decision-making and other innovative approaches to consensus building. This includes the establishment of expert panels on specific questions and focused round-table discussions. Such mechanisms also allow for broader societal and non-governmental input. Basic participatory rights of non-governmental actors such as access to information, documentation and decision-makers need to be guaranteed. In general, public and private efforts and activities are to be coordinated and integrated for effective solutions.
- Given the large and increasing amount of international environmental institutions, a review should be initiated with

the aim of streamlining the body of existing rules. At the global level, relevant international bodies such as UNEP should be strengthened, enabling them to work effectively to solve environmental problems which pose potential security threats. In addition, exchange, integration and co-operation among the diverse institutions involved in the fields of environment and security should be enhanced which may involve establishing new for a and structures.

Development Policy Key Findings

- In order to establish preventive mechanisms for environmental conflicts, development policy, which is specifically directed at ameliorating selected consequences and contextual factors, plays and important role in respective regions. Development policy contributes to stabilizing the socio-economic and political context of actors experiencing environmental stress and can contribute to the prevention of environmental conflict. At the same time, it can be positively employed in post-conflict phases by supporting political, economic, and administrative reforms to change past structures which have contributed to conflict. Development co-operation can address both the consequences of environmental stress and the prevention of environmental stress at the different stages along the conflict continuum.
- To prevent deep-rooted societal conflicts, there are a number of possible sustainable development measures that should be implemented, ranging from sustainable economic growth and poverty reduction programs to strengthening equity, democratization and respect for human rights. The strengthening of local and sub-regional authorities and self-government bodies and the involvement of local participants in the development process are important prerequisites to enable the incorporation of the society into participatory structures. Democratic processes should be strengthened, allowing for the creation of a climate and the capacity for constructive interaction between civil society and government, a requirement for long-term sustainability.
- Multilateral and bilateral development co-operation is one approach to preventing conflict and ensuring sustainability. Development co-operation with the goal of sustainable human development needs to address specific population policies to offer solutions, for both environmental stress and rapid population growth. Economic decline or unequal economic growth may heighten tensions and contribute to the potential incidence or escalation of conflict. Therefore there is a need for shared and coordinated approaches to development co-operation among the various international donors and regional bodies to allow for more effective and appropriate conflict prevention and peace building. Selected forms of development assistance should be shaped by the varying potentials of the countries involved, according to the needs and interests of their populations. Preventing unnecessary debt burden and economic dependency is a critical component to sustainable development.
- The various institutions in the global community are asked to continue improving the different responses mentioned above. The need to scale up popular development initiatives implies turning attention not only to national political structures, but also to developing sound long-term macroeconomic stabilization plans and continued financing for projects. This involves the need for improving the methods for organizations and related groups to exchange information, to create and maintain feasible budgets for project implementation, to adopt common approaches for economic and aid co-ordination, and to provide mutual support. It also entails building new forms of international co-operation via the reform of existing global institutions and for all donors to improve common standards for safeguards which prevent negative social impacts resulting from development projects.

Foreign and Security Policy Key Findings

- As environmental conflict is a cross-sectoral issue, it also calls for foreign and security policy responses in order to prevent escalation and to address the underlying consequences of environmental stress. Security institutions should increase their awareness of the links between environmental stress and security in order to contribute to the prevention of environmental conflicts. Environmental issues are valuable in establishing dialogue and co-operation. They serve as confidence building measures that may be used to promote regional stability. The aim of the responses enumerated in the following is to establish links between environmental policy and foreign and security policy.
- This global, integrative and co-operative approach includes the contributions of foreign policy and security institution's specific instruments and mechanisms which can support the prevention or resolution of conflicts. Enhancing cooperation and interaction amongst existing institutions based on their respective charters, missions and capabilities is needed. This will require communication among foreign and security policy actors and institutions with relevant development and environmental organizations and stakeholders within civil society. While environmental issues may serve as triggers to conflict that threaten regional stability, co-operation on commonly shared environmental issues can establish dialogue and lines of communication which are valuable in reducing regional tensions over non-environmental issues. The establishment of regular interaction and consultation at the different levels of policy-making is required for co-operative security and for information sharing.
- Security institutions should contribute to information sharing on the basis of available data, including early warning and remote sensing data, according to their respective mandates. In order to establish communication and exchange between security organizations and other relevant actors in the field of environment, the opportunity to designate, within security organizations, an official responsible for such a task could be discussed. Foreign and security institutions can enhance and strengthen the positive activities of the parties involved through the provision of confidence building measures such as treaty monitoring and

short-term stabilization programs and impartial adjudication.

- As far as security institutions are concerned, existing prevention and dialogue mechanisms can be used to address the security impact of environmental issues, capitalize on the catalytic function of environmental co-operation for confidence building, and enhance dialogue and co-operation among themselves. The existing mechanisms of mediation, dispute settlement, conciliation, and arbitration in the foreign and security field should be employed in environmental conflicts as appropriate. This includes the use of dispute settlement mechanisms of existing environmental regimes such as the International Court of Arbitration, and other principle international and regional security institutions such as UN and OSCE. Within NATO, the North Atlantic Council, the Euro-Atlantic Partnership Council, the Mediterranean Co-operation Group, the special relationship with the Russian Federation and the Ukraine all provide opportunities for consultation and preventive diplomacy.
- In the post-crisis management stage, a monitoring process which includes environmental, political, economic, social and demographic factors and the perceptions of threat should be established as a long term stabilization measure. The international donor community, through short-term stabilization projects, can demonstrate their potential advantages of de-escalating or resolving the conflict. Post-crisis management mechanisms should also assess the environmental stress generated over the course of the crisis and its resolution. Furthermore, it should consider the social, economic, demographic and political consequences resulting from environmental stress.

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[1] The Pilot Study (including an English, French, and German Executive Summary) has been published and is available free of charge upon request from the CCMS Secretariat: NATO Scientific Affairs Division (Fax: *32 2 707 4232, email: ccms@hq.nato.int).

[2] The environment and security debate in policy and academic arenas has been fostered by the publications of Lester Brown, Thomas Homer-Dixon, Richard Ullman, Jessica Mathews, Norman Myers and Robert Kaplan.

[3] These include the following research projects: the Project on Environment, Population and Security, conducted by Thomas Homer-Dixon of the Peace and Conflict Studies Program of the University of Toronto; the American Association for the Advancement of Science and the Environmental Conflicts Project (ENCOP) lead by Günther Baechler of the Swiss Peace Foundation and Thomas Spillmann of the Swiss Technical University.

[4] Several projects, for example the International Peace Research Institute-Oslo (PRIO) under the head of Nils Petter Gleditsch, use quantitative methods to look for correlation between different types of environmental degradation and conflict.

[5] The Global Environmental Change and Human Security Project (GECHS) of the International Human Dimensions Programme, University of Victoria, Canada under the Chair, Steve Lonergan and the Dutch National Research Programme on Global Air Pollution and Climate Change.

[6] Several examples include the civil wars in Rwanda and Sudan, the escalation of the domestic political crisis in Nigeria, domestic and transboundary tensions on the Indian subcontinent, or conflicts about the distribution of water in the Middle East. In these examples, the inter-linkages between environmental stress and conflict have played an important component in the conflict dynamic.

[7] Information on the Pilot Study Interim Report was also referenced in the Spring 1997 edition of the Woodrow Wilson Center's *Environmental Change and Security Project Report*, Issue 3.

State Failure Task Force Report: Phase II Findings

Prepared by Daniel C. Esty, Jack A. Goldstone,
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Abstract: In response to a request from Vice President Al Gore in 1994, the CIA established "The State Failure Task Force," a group of independent researchers to examine comprehensively the factors and forces that have affected the stability of the post-Cold War world. The Task Force's goal was to identify the factors or combinations of factors that distinguish states that failed from those, which averted crises over the last 40 years. The study represents the first empirical effort to identify factors associated with state failure by examining a broad range of demographic, societal, economic, environmental, and political indicators influencing state stability. The Task Force found that three clusters of variables had significant correlation with subsequent state failures: (1) quality of life; (2) openness to international trade; and (3) the level of democracy. However, it is the interaction among these variables that provided the most important insights. Following are excepts from Phase II of the State Failure Task Force findings.

Introduction

The initial report of the State Failure Task Force[1] developed a global model of the factors that contributed to serious political crises over the last four decades. In this report, we describe the progress of the Task Force on four additional research issues:

- Confirmation and refinement of the global model. This work included testing the model on an updated problem set, varying the set of control cases, and testing new or refined variables. In particular, we refined the level-of-democracy variable to examine partial democracies—countries that combine democratic and autocratic features—and their risks of state failure.

- Fitting a model for Sub-Saharan Africa. We also examined how the global model might best be modified to apply to the countries of Sub-Saharan Africa. To improve the accuracy of prediction, the Task Force undertook a pilot study of event sequences in a limited number of Sub-Saharan African cases of state failure and state stability to identify factors that could be precipitators or "accelerators" of crises.

- Transitions to democracy and autocracy. The initial study only examined cases of adverse or disruptive regime transitions. Because of the great interest in transitions to democracy, and the conditions that provide for stable or unstable democracy, the Task Force applied its methodology for analyzing risks of state failure to transitions toward and away from democracy. This report explores the preliminary findings of these analyses of the emergence and decay of democratic regimes.

- The role of environmental factors in state failure. It appeared from the Phase I results that environmental factors did not directly contribute to the risks of state failure. The Task Force believes that this finding was due, in part, to the paucity, poor quality, and lack of comparability of the national-level environmental data and, in part, to the impact of environmental factors on political conflicts being mediated by other economic, social, and political conditions. We, therefore, undertook special initiatives to assess the state of global environmental data and to develop a mediated, two-stage model of the role of environmental factors on the risks of state failure. In this model, it appears that environmental hazards—in states with underlying vulnerabilities and limited governmental or social capacity to respond to environmental deterioration—is associated with increased risk of state failure.

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I. Confirmation and Refinement of the Global Model

Updating the Problem Set and Revising the Control Cases

One problem frequently encountered in statistical analyses such as the one performed in the initial phase of the State Failure project is that specific results may be highly sensitive to a particular data set.[2] If the results reflect statistical accidents, rather than underlying social and political forces, then slight changes in the data set may greatly shift the results. Adding or subtracting cases, or changing the particular control cases, could make some variables newly significant or remove some variables from the list of significant factors. Our first task in re-examining our results was to update the problem set to include state failure cases from 1994-96, and to select new control sets for testing this new data, to make certain that our initial results proved robust.

It was reassuring to find that despite significant revisions and updating of the problem set and analyses using two different sets of control cases and three distinct analytical techniques, the *same* three variables—infant mortality, trade openness, and level of democracy—emerged as the critical discriminators between stable states and state failures. Moreover, these analyses resulted in about the same two-thirds range of accuracy in discriminating failures and stable cases.

State Failure Cases[3]

The set of "state failure cases" in the initial State Failure Task Force Report was updated and revised by reexamining all of the cases and consulting area experts to identify recent events (1994-96) for inclusion.[4] A number of cases in the initial problem set were dropped as being of insufficient magnitude or not meeting the precise definitions for failure events. A considerable number of new cases from recent years were added. However, none of these changes affected the global model results.

Control Cases[5]

The two new sets of control cases were obtained, as before, by randomly selecting to match every country-year that preceded a state failure by two years, three countries that were stable (experienced no crises for the succeeding five years). Changing the control sets made no difference to any of the global model results.

The three analytical techniques used were logistic regression, neural network analysis, and genetic algorithm modeling.[6] Logistic regression and neural network analysis were used to estimate the "predictive" accuracy of our models. Genetic algorithm modeling was used to help identify candidate sets of variables, as a check on the univariate regression methodology, and to validate the suggestions of Task Force social science and area experts. Although each method relies on different assumptions and methods of estimation, all techniques converged on identifying the same three-factor model as the most efficient discriminator between stable and failure cases and yielded models with accuracy of predicting case outcomes of about two-thirds.

Figure 1: Phase I Analytic Process

Identified State Failure and Control Cases

113 failure cases, including:
- Revolutionary wars
- Ethnic wars
- Genocides or politicides
- Adverse or disruptive regime changes

339 control cases, randomly selected

Selected Variables To Test for Association with State Failure

Some 600 variables evaluated:
- Demographic and societal
- Economic
- Political and leadership
- Environmental

Total of 75 high-priority variables selected:
- Most likely to correlate with state failure
- Based on reasonably complete and reliable data

Applied Analytical Methods

Single variable tests identified…
31 variables best at distinguishing failures from nonfailures

Analysis of combinations of up to 14 of these using:
- Statistical logistic regression analysis
- Neural networks analysis

Formulated Models

Single-best model relied on three variables:
- Infant mortality-indirect measure of quality of life
- Openness to international trade-value of imports and exports divided by GDP
- Level of democracy-from information on political institutions

Table 1: Historical State Crises, by Type

Type of Crisis	Initial Phase	Phase II
Revolutionary war	41	50
Ethnic war	60	59
Regime transition	80	88
Genocide and politicide	46	36
Total Number of Consolidated Crises	113	127

Summary of Phase I Findings

The global model developed in the initial phase of the State Failure project and detailed in the task force report[a] had the following features:

- *It considered as "failures" four different kinds of political crisis—revolutionary wars, ethnic wars, adverse or disruptive regime transitions, and genocides or politicides—of varying magnitudes.*
- *The model examined all such crises that occurred during the years 1957-94 in countries whose population in 1994 was greater than 500,000 according to US Census Bureau data.[b]*
- *The model compared conditions in countries that experienced crises at a time two years before the onset of a crisis with conditions in a matched set of stable—or "control"—countries that did not experience a crisis any time in the succeeding five years.*

The global model was developed after examining hundreds of candidate factors suggested as theoretically relevant to state crises and rigorously analyzing 75 variables that had been deemed highly relevant by experts and had global data available for most of the 1955-94 period. The Task Force found that the most efficient discrimination between "failure cases" and stable states was obtained from a global model with only three factors: the level of infant mortality, the level of trade openness, and the level of democracy.

For this global model, a country's infant mortality was measured relative to the world average level of infant mortality in a given year (to correct for a long-term global decline in infant mortality rates). Trade openness was measured as the total value of imports plus exports as a percentage of a country's GDP. Countries were classified as either "More Democratic" or "Less Democratic" (autocracies) on the basis of their level of institutional democracy.

Using these three variables, roughly two-thirds of historical failure and nonfailure cases could be accurately classified. In addition, several interesting relationships among these factors were found:

- *Although high infant mortality consistently appeared to be linked to state failures, we are certain that there is NO direct causal connection between infant deaths and ensuing political crises. Instead, infant mortality appears to be acting primarily as an indicator for the overall quality of material life. Like the canary in a coal mine, whose death indicates serious health risks to miners, high infant mortality serves as a powerful indicator of more broadly deleterious living conditions. This was clear since in some models, income level (real GDP per capita) worked almost as well as infant mortality in predicting state failure. In addition, both infant mortality and GDP per capita could be replaced by a bundle of health and welfare indicators, such as levels of nutrition, health care, and education with almost the same results. Infant mortality plays a key role in the global model not because infant deaths per se are a causal factor, but because infant mortality is the single-most-efficient variable for reflecting a country's overall quality of material life.*
- *The effects of trade openness and infant mortality on risks of state failure were separate, not overlapping. Levels of trade openness and infant mortality showed almost no relationship. They varied independently and operated independently to affect state failure risks.*
- *Infant mortality had a much stronger impact on the risk of state failure in democracies, and had a relatively weak effect on the risk of failure in less democratic countries. Trade openness showed the reverse pattern; that is, trade openness had a stronger impact on the risk of state failure in less democratic countries and had a weaker, though still significant, impact on failure risks in more democratic countries.*
- *Three additional variables were found to be important indicators for specific kinds of political crises, although they did not emerge as important in the overall model. For adverse or disruptive regime changes, regime duration was a significant factor. New regimes were found to have substantially higher risks of further adverse or disruptive changes in their earlier years. For ethnic conflicts, both the ethnic character of the ruling elite and a youth bulge were found to be important factors. Ethnic wars were most likely when a single ethnic group dominated the ruling elite; this was true whether the dominant group came from a minority or majority ethnic group. In addition, the risks of ethnic war were greatly increased by the presence of a "youth bulge"; that is, a large percentage of 15 to 29-year-olds relative to the population age 30-54.*

[a] *See Esty, Daniel C., Jack A. Goldstone, Ted Robert Gurr, Pamela Surko, and Alan Unger. Working Papers: State Failure Task Force Report. McLean, VA: Science Applications International Corporation, 30 November 1995.*

[b] *Despite being over our population size cutoff, two countries were omitted: Eritrea (because data were not available) and Qatar. Two countries with populations below 500,000 using US Census Bureau data—Comoros and Luxembourg—were inadvertently included. These deviations from the rule did not contribute significant error, however, because the number of countries in the study was large.*

Retesting With a Refined Level of Democracy Variable

The original global model, using infant mortality, trade openness, and level of democracy, measured democracy as a dichotomous variable, classifying countries as "more democratic" or "less democratic." However, it became apparent that not all democracies were "equal" in their vulnerability to state failure. The rich and well-established democracies were extremely stable. In contrast, the more recently established and poorer democracies were at very high risk of failure. Given this result, and the interests of policymakers in democratic transitions, it was clearly important to better differentiate the democracy variable to examine the risks associated with "partial democracies."

Using both the democracy and autocracy scales of the Polity III Global Data Set[7], each country was classified as a full democracy, a partial democracy, or an autocracy, on the basis of its political institutions:[8]

- Full democracies have all the characteristics of liberal democracy—such as elections, competitive parties, rule of law, limits on the power of government officials, an independent judiciary—and few or none of the characteristics of autocracy.
- Partial democracies have some democratic characteristics—such as elections—but also have some autocratic characteristics, such as a chief executive with almost no constraints on his/her power, sharp limits on political competition, a state-restrained press, or a cowed or dependent judiciary. Most are countries that have recently transitioned toward democracy but have not yet fully replaced autocratic practices and institutions; some resemble what Fareed Zakaria has referred to in a recent *Foreign Affairs* essay as "illiberal democracies."[9] They are countries that have adopted some democratic practices but have not yet fully extinguished autocratic practices in their government.
- Autocracies have various characteristics of autocracy and few or none of the characteristics of democracies.

Guarantees of political rights are essential to institutionalized democracies, and most such

Figure 2: Global State Failures, 1955-96

Figure 3: Number of Global State Failures by Type, 1955-96

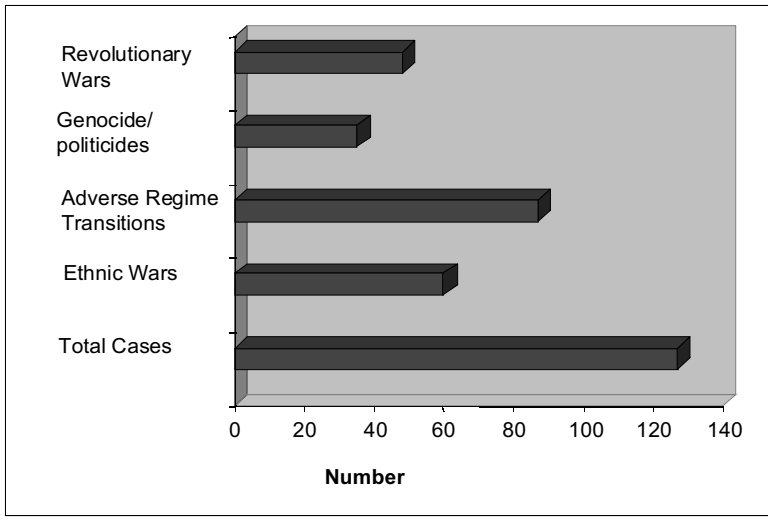


Figure 4: Global State Failures: Revolutionary Wars, 1955-96

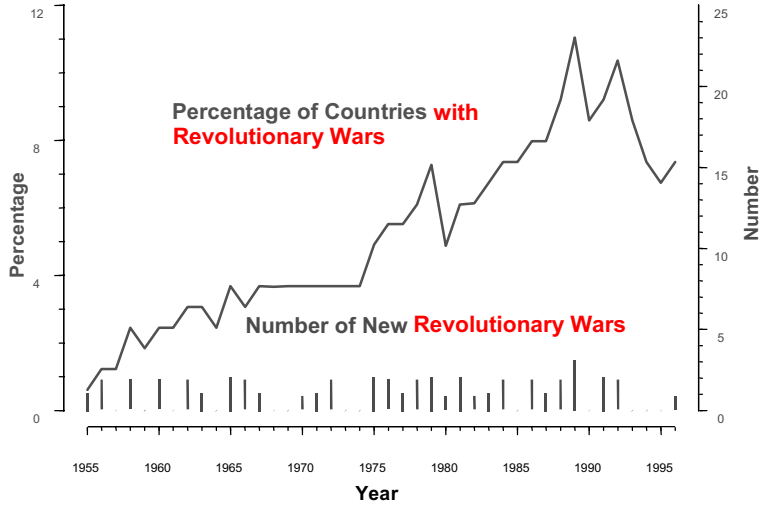


Figure 5: Global State Failures: Ethnic Wars, 1955-96

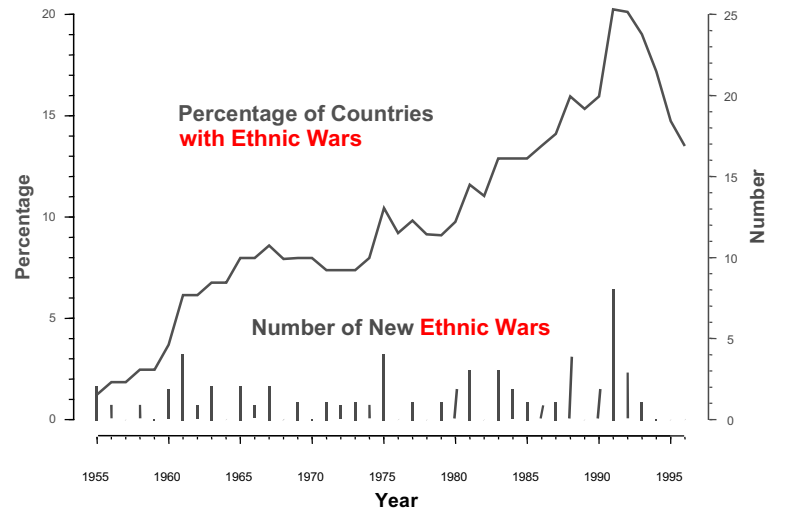


Figure 6: Global State Failures: Genocides and Politicides, 1955-96

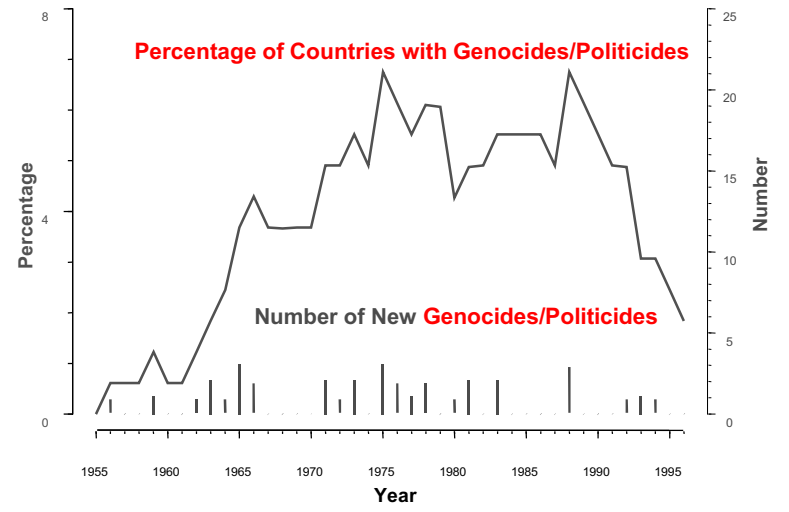
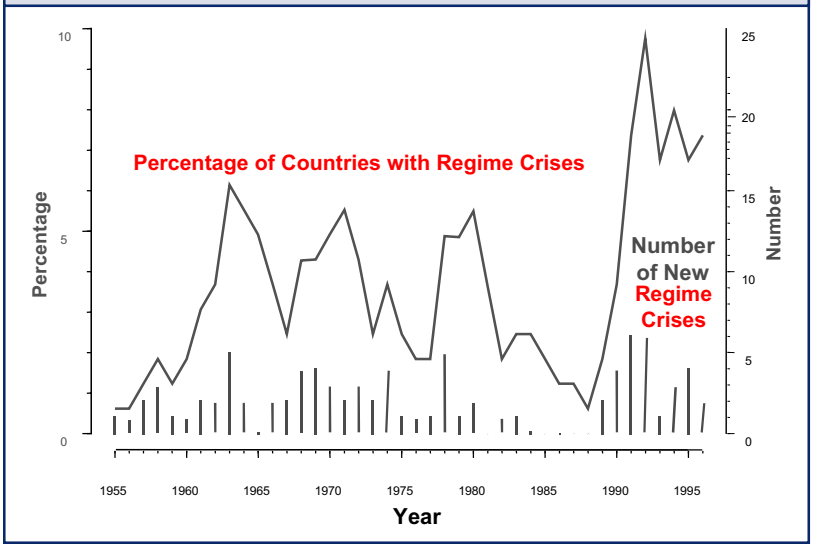


Figure 7: Global State Failures: Adverse or Disruptive Regime Changes, 1955-96



polities guarantee civil rights to all citizens. Therefore, while the democracy index is based on an analysis of political institutions, it correlates very closely (+.90) with Freedom House indices of political rights and civil liberties.

Results

Using the trichotomized measure of democracy, we discovered that *partial democracies are indeed far more vulnerable to state failure–type crises than are either full democracies or autocracies.* To be precise, when using this measure of democracy in the global state failure model—along with infant mortality and trade openness—to discriminate between stable and crisis cases, we find that partial democracies, other things being equal, are on average *three times* more likely to fail.

This refined version of the global model also confirms and makes more precise our estimates of the impact of trade openness and infant mortality (or overall quality of material life) on failure risks. Using the updated problem set, revised data, and new control cases, we find that states with above-average trade openness, other things being equal, have one-half the failure risk of countries with below-average trade openness. In addition, countries with above-world median levels of infant mortality have, other things being equal, three times the risk of state failure as compared with countries with below-median levels of infant mortality.

II. Fitting a Model for Sub-Saharan Africa

In the initial work of the Task Force, there was some concern that grouping advanced democratic nations and poor autocracies in one global analysis was like comparing apples and oranges. We have, therefore, applied our analytic techniques to testing the model on those crisis events and a matched set of control cases, drawn solely from the countries of Sub-Saharan Africa.[10] In addition to testing all of the factors that emerged as significant in the initial report, we also examined a variety of additional factors that area experts suggested as specifically relevant to Africa, including a country's colonial heritage, conditions of ethnic discrimination, and level of urbanization.

The model that most effectively discriminated between crisis cases and control

Changes to the List of Historical State Crises

The set of crises used in the analyses reported here consists of 127 "consolidated" cases of state failures, of a single type, and complex events involving several different kinds of failure in sequence. This is 14 more than in the initial study. The differences, as compared with the list in the initial report, can be summarized as follows:

- *Revolutionary wars. Examples of cases added are Islamist revolutionary movements in Egypt (1986 to present) and in Algeria (1991 to present) and the revolutionary war that overthrew Mobutu's regime in Zaire (now Congo-Kinshasa) in 1996-97.*
- *Ethnic wars. Some ethnic rebellions from the original list were dropped because they were of very low magnitude; others were consolidated into other events. An example of a consolidated case is India, where multiple autonomy rebellions from 1952 to the present are treated as one event. Some internal wars meet the criteria of both revolutionary and ethnic wars, such as the civil war for control of the Afghan Government (1992-97) fought by political movements based on the Pashtuns, Tajiks, Uzbeks, and Hazaris.*
- *Adverse or disruptive regime transitions. A number of cases were dropped and others added. Examples of recent failures of democratic regimes now included in the data set are Albania 1996, Armenia 1994-96, Belarus 1995-96, and The Gambia 1994. Dates and descriptions of a number of historical cases also were changed on the basis of new and more detailed information.*
- *Genocides and politicides. No new cases since 1994 were identified, although indiscriminate attacks on civilians in Chechnya during 1994-96 approached the threshold for politicide. The cases dropped were ones in which killings of civilians did not, on closer examination, appear to be part of a systematic and sustained policy. For example, killings of Kurdish civilians by Kurdish militants and the Turkish military since 1984 are not numerous or widespread enough to meet the definitional criteria.*

In addition, the three lowest magnitude ethnic wars—Papua New Guinea (Bougainville, 1988-97), Thailand (Malay Muslims, 1993-present), and the United Kingdom (Catholics in Northern Ireland, 1969-94)—were excluded from the global analysis of state failures because they were considered too small to count as major events. They were, however, retained in the data set for future study of ethnic conflicts.

[a] Other conflicts categorized and counted as both revolutionary and ethnic wars are Angola 1975-97, Ethiopia 1975-91, and Somalia 1988 to the present.

Trends and Patterns in State Failures

Some types of state failure are particularly likely to lead to other failures, with several patterns emerging from the analysis of discrete and complex cases:

- *There is a substantial risk that internal wars—revolutions and ethnic conflicts—will precede other state failures. Of 50 revolutionary wars, 19 (38 percent) are the first event in a complex case that subsequently included one or more adverse regime transitions, ethnic wars, or genocides. The percentage is higher for ethnic wars—44 percent (26 of 59) of these are the first event in a complex case.*
- *Adverse and disruptive regime transitions are less likely than revolutionary or ethnic wars to lead to other kinds of state failures. Nearly half (41 of 88) are discrete events; less than one-fifth (15 of 88) proved to be the first stage in a complex event.*
- *Genocides and politicides almost always are a consequence of other kinds of state failure. Usually the connection is clear-cut, for example, when an authoritarian regime seizes power and sets out to eliminate political opponents (as in Chile 1973-76) or when revolutionary or ethnic challenges prompt a regime to use extreme measures to reestablish security (as in Indonesia against suspected Communists in 1965-66 and against East Timor nationalists after 1975). In 1996, the only ongoing episode was in Sudan.*

There also are distinctive trends in the onset and frequency of each type of state failure. In the aggregate, the number of states in failure increased up to the end of the Cold War, but in the mid-1990s began to decline. Revolutionary wars have declined in frequency; whereas, ethnic wars have tended to increase, most sharply so in the immediate aftermath of the Cold War. Adverse and disruptive regime transformations, on the other hand, have no distinct long-term trend but show a sharp upward spike in the 1990s, mainly due to failures of new and partially democratic regimes in Africa and some of the post-Communist states.

Table 2: Global Model Results

Key Variables	**Countries at Greater Risk**	**Countries**
Material Living Standards	Infant mortality above median	Infant morta
Trade Openness (imports+exports)/ GDP	Below median	Above medi
Level of Democracy	Partial democracies	Autocracies;

Figure 8: Countries by Level of Democracy, 1996

Full Democracies		Partial Democracies	Autocracies	
Argentina	Lesotho	Bosnia and Herzegovina	Afghanistan	Nigeria
Australia	Lithuania	Cambodia	Albania	North Korea
Austria	Madagascar	Comoros	Algeria	Oman
Bangladesh	Malawi	Congo, Republic of the [a]	Angola	Rwanda
Belgium	Mali	Ethiopia	Armenia	Saudi Arabia
Benin	Mauritius	Fiji	Azerbaijan	Serbia and Montenegro
Bolivia	Mongolia	Georgia	Bahrain	Singapore
Botswana	Namibia	Ghana	Belarus	Somalia
Brazil	Nepal	Guinea-Bissau	Bhutan	Sudan
Bulgaria	Netherlands	Guyana	Burkina Faso	Swaziland
Canada	New Zealand	Honduras	Burma	Syria
Central African Republic	Nicaragua	Jordan	Burundi	Tajikistan
Chile	Norway	Kyrgyzstan	Cameroon	Togo
Columbia	Panama	Malaysia	Chad	Tunisia
Costa Rica	Papua New Guinea	Mexica	China	Turkmenistan
Cyprus	Philippines	Moldova	Congo, Democratic Republic of the [b]	Uganda
Czech Republic	Poland	Mozambique	Cote d'Ivoire	United Arab Emirates
Denmark	Portugal	Pakistan	Croatia	Uzbekistan
Dominican Republic	Romania	Paraguay	Cuba	Vietnam
Ecuador	Slovenia	Peru	Egypt	Zimbabwe
El Salcador	South Africa	Russia	Gabon	
Estonia	South Korea	Senegal	The Gambia	
Finland	Spain	Sierra Leone	Guinea	
France	Sweden	Slovakia	Indonesia	
Germany	Switzerland	Sri Lanka	Iran	
Greece	Taiwan	Tanzania	Iraq	
Guatemala	Thailand	Yemen	Kazakhstan	
Haiti	The Former Yugoslav Republic of Macedonia	Zambia	Kenya	
Hungary			Kuwait	
India	Trinidad and Tobago		Laos	
Ireland	Turkey		Lebanon	
Israel	Ukraine		Liberia	
Italy	United Kingdon		Libya	
Jamaica	Uruguay		Mauritania	
Japan	Venezuela		Morocco	
Latvia			Niger	

[a] Congo (Brazzaville) [b] Congo (Kinshasa)

cases in the Sub-Saharan Africa model had six significant elements.[11]

Level of Democracy

As with the general model, partial democracies were most vulnerable to state failure. This result again showed a high degree of statistical significance. However, while in the global model full democracies and autocracies were about equally stable, in Sub-Saharan Africa autocracies were slightly more stable than even full democracies—presumably because in Africa full democracies have greater problems managing ethnic conflicts and fluctuations in material living standards than do the full democracies of Europe and North America. In addition—and this is one of our most striking results—we found that the vulnerability of partial democracies to state failure was especially great in Sub-Saharan Africa and much higher than in the world at large. The precise results of this model were that in Sub-Saharan Africa, other things being equal, partial democracies were on average 11 times more likely to fail than autocracies. Full democracies were far less vulnerable; other things being equal, they were on average more than twice as likely to fail than autocracies.

Trade Openness

Trade openness is also confirmed as a highly statistically significant correlate of state failure. The greater a country's trade openness, the *less* likely that country is to experience a major state crisis. As in the global model, other things being equal, countries in Sub-Saharan Africa that were above the median in trade openness were on average only about one-half as likely to fail as countries below the median.

Change in Material Living Standards

In the global model, which compared countries with a huge

Key Variables

Key variables measure the following items:

- *Infant mortality. Although this variable directly captures reported deaths to infants under one year old per thousand live births, it also serves as an indirect measure of a host of broad-based material standard of living and quality-of-life indicators. Infant mortality is strongly correlated with a variety of other variables encompassing economic performance, education, social welfare, environmental quality, and democratic institutions.*
- *Trade openness. This variable is a ratio that measures the value of imports plus exports divided by GDP. Of the other variables analyzed in the first phase of this project, it correlated only with the density of roads—generally accepted as an indicator of economic development—and population size.*
- *Level of democracy. This variable is constructed from information on political institutions. Democratic regimes have competitive political participation, elected chief executives, and significant checks on executives' exercise of powers. The variable correlates closely with indicators of civil and political liberties and also with measures of economic well-being.*
- *Regime durability. This variable is a count of the number of years since the last major, abrupt change in regime. Abrupt shifts toward or away from democracy count as regime changes and reset the duration count to zero. Regime changes that follow state breakdown and civil war also reset the count. Nonviolent transitions from one authoritarian regime to another, or one democratic regime to another, do not register on this variable. Regime duration is correlated with several indicators of economic development, including per capita GDP.*
- *Youth bulge. This variable is a ratio of the population in the 15- to 29-year age bracket relative to that in the 30 to 54-year age group. It correlates with six other variables related to economic development and education.*
- *Ethnicity of the ruling elite. This is a variable that compares the ethnic composition of the ruling elite to that of the population at large in an ethnically divided society. It indicates whether the elite demographically represents a minority group, a majority group, or the population as a whole. It is uncorrelated with other variables in this study.*
- *Annual change in GDP per capita. This variable indicates the direction of recent changes in material welfare. It is measured by taking the change in real GDP per capita from the previous year. Positive change indicates growth; negative change indicates economic decline.*
- *Level of Urbanization. This variable measures the proportion of total population that is living in cities of 100,000 inhabitants or larger. It captures the degree to which a country's overall population is urban.*
- *Colonial heritage. This variable compares the impact of French colonial heritage to the average impact of all other former colonial powers in Sub-Saharan Africa. It has often been opined that different colonial powers left (or are still active in creating) different degrees of political stability in their former colonies. While there are not enough cases to support statistical tests for every past power—Britain, France, Germany, Italy, Belgium, and Portugal—on the recommendation of area experts, we chose France as a country with many former colonies and a still active role in most of the period covered.*
- *Ethnic discrimination. This variable is derived from information on ethnic and religious groups that are economically or politically disadvantaged because of present or past practices of discrimination by dominant groups. The indicator signifies the existence of at least one politically significant communal group subject to significant discrimination or that sought greater political autonomy from the state in which it was situated.*
- *Land burden. This variable is the number of farmers per unit of cropland multiplied by the ratio of farmers to the total number of workers. It is highest in countries where a large proportion of the population is dependent on agriculture, but arable land is limited.*
- *Deforestation rate. This variable measures the annualized rate of change in forest area from 1980 to 1990, using data provided by the UN Food and Agriculture Organization.*
- *Telephones per capita. This variable measures the number of telephone lines in a country divided by the total population. It is used as a rough indicator of a country's capacity to respond to "shocks" or changes. A country's ability to install and operate a major physical infrastructure reflects, we believe, its general ability to "get things done." In addition, there are reasons to think that communication capacity is especially important for effective responses to environmental problems. Telephones per capita correlates highly with per capita GDP level, although the annual changes in the two variables are not correlated.*
- *Soil degradation. This variable combines information about the severity and extent of soil degradation within a country, based on an assessment completed in 1990. The assessment utilized regional experts to estimate degradation over the previous five to ten years.*
- *Population in subsistence agriculture. This variable is used to measure the degree to which a country's population is vulnerable to either deforestation or soil degradation. Subsistence agriculture is an activity that indicates high poverty and high dependence on the health of terrestrial ecosystems. The percent of population dependent on subsistence agriculture is inversely correlated with the level of GDP per capita, although the annual changes in the two variables are not correlated.*

Figure 9: Sub-Saharan Africa State Failures, 1955-96

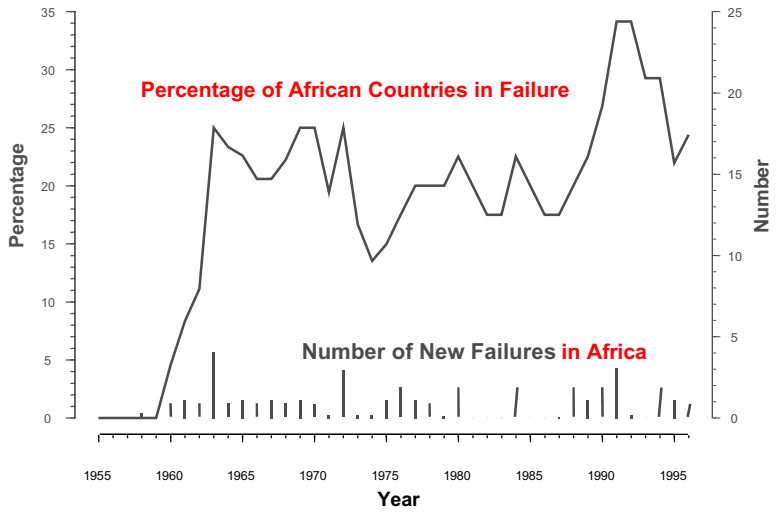
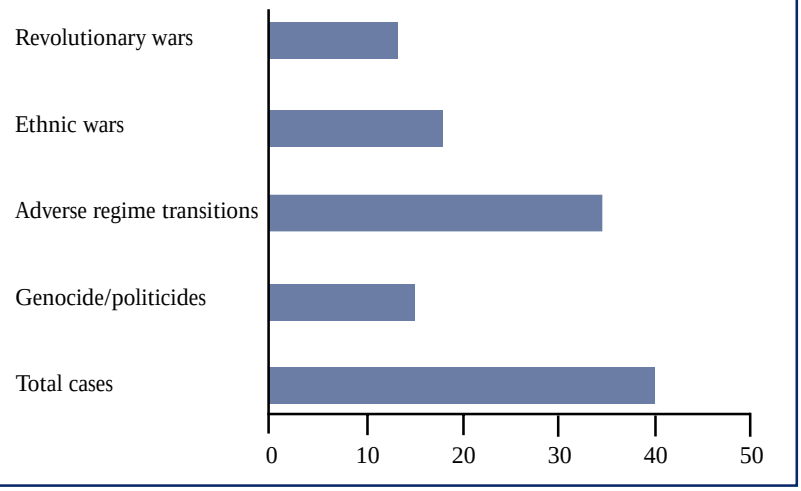


Figure 10: Number of Sub-Saharan African State Failures by Type, 1955-96



Variables Tested for the Sub-Saharan Africa Model

Economic
Trade openness
GDP per capita
Change in GDP per capita
Land burden
Urban population
Population density
Change in reserves

Political/leadership
Separatist activity
Democracy
Change in democracy level
Economic discrimination
Political discrimination
Ethnic discrimination
Party fractionalization
Parliamentary responsibility
Party legitimacy

Demographic/societal
Youth bulge
Colonial heritage
Labor force
Annual change in employment
Secondary school enrollment ratio
Ethno-linguistic fractionalization
Amnesty International political terror scale
US State Department political terror index
Government repudiation of contracts
Risk of expropriation

Agricultural
Cropland area
Irrigated land
Population in agriculture
Population in subsistence agriculture

Energy
Commercial energy use
Commercial energy production

range of living standards, the level of material living standards—as measured by infant mortality (or by GDP per capita or a basket of health and welfare measures)—was found to be a powerful discriminator of risks of state failure. In the Sub-Saharan African cases, where most countries are clustered at the low end of the scale of material living standards, recent changes in living standards emerged as a stronger indicator of failure risks than did absolute levels. In particular, other things being equal, countries that had experienced a negative annual change in GDP per capita were on average twice as likely to experience a serious political crisis two years later than countries that had had a positive change in GDP per capita.[12]

Colonial Heritage

The Task Force—along with Sub-Saharan Africa regional experts—discussed the possibility that differences in colonial heritage affect vulnerability to state failure. Although states of all varieties of colonial background did experience problems, the data showed that, holding other factors equal, former French colonies on average had only one-third the risk of failure of other African countries. This was a firmly statistically significant result. However, we note that until recently France has also maintained a higher level of engagement—political, financial, and military—with its former colonies than most other powers. As these levels of engagement decline, it may well be that French colonial heritage will become less significant as a moderating factor in regard to state crises.

A Pilot Event-Data Analysis

The general models of state failure identify risk factors associated with serious political crises, but they are less useful in forecasting outcomes for individual countries. To better understand the factors that might precipitate a failure in a high-risk country during the two-year period before a crisis, the Task Force conducted a pilot analysis[a] of events in twelve Sub-Saharan African cases—four ethnic wars, four regime crises, and four control cases—since the mid-1980s.[b] We used the Global Events Data System at the University of Maryland—which relies on Reuters' international wire service—to track daily events over a period of two years before the onset of state failure (or, for the control cases, during a two-year period in which no state failure occurred) and to identify:

- *"Accelerators." Feedback events that affect the general conditions underlying conflict development, which also have a cumulative interaction effect that may increase escalation.*
- *"De-accelerators." Events such as negotiations and policy reforms that are likely to de-escalate a crisis.*
- *"Triggers." Events that are likely to propel a high-risk situation to the next phase of crisis escalation.*

Based on previous analyses using this approach, we would expect to observe an increase in the number and severity of accelerator events shortly before the onset of state failure.

The method analyzes political events over time, with separate models for ethnic warfare and regime crisis. Examples of accelerators of ethnic warfare are "attacks on or threats to core symbols of ethnic group identity" and "external support for communal group objectives from international actors." For example, whereas external support for communal groups is typically thought to be a factor that facilitates conflict escalation, tracking accelerators allows us to trace the ebb and flow of the types, quality, and quantity of support over time.

On the basis of the pilot study, the Task Force concluded that the results of the analysis are sufficiently interesting to merit further study. Although the sample size was too small for rigorous statistical analysis, the time clusterings of events for countries in crisis were more similar to those of other countries in crisis—either regime crisis or ethnic war—than to countries not in crisis,[c] suggesting that further analysis by methodologists and area experts may be fruitful. A side benefit of the analysis was that it allowed the start dates of four of the crises to be adjusted, because—based on the sequence of daily events—some of the crises apparently began either earlier or later than the Task Force had previously specified in the list of historical crises. In general, the pilot study results demonstrate that monitoring accelerators is a potentially powerful analytic tool that allows analysts to observe the development of crises in high-risk countries in fine-grained steps, rather than being constrained by the limitations of yearly data.

The graphic illustrates the pattern of accelerators in former Zaire, a case of ethnic war beginning in April 1992.[d] It shows a gradual buildup of events from April 1990 to a peak in October 1991, but deaccelerators seem to check complete breakdown up to that point. Accelerators of ethnic warfare (disunity with the elite and elite responses to threats) reach a high level from January to March 1992.

[a] *The accelerators approach used here is derived from a study of the accelerators of genocide and politicide reported by Barbara Harff, "Early Warning of Genocide: The Cases of Rwanda, Burundi, and Abkhazia." In Ted Robert Gurr and Barbara Harff,* Early Warning of Communal Conflicts and Genocide: Linking Empirical Research to International Responses. *Tokyo: United Nations University Press, Monograph Series on Governance and Conflict Resolution No. 05, 1996.*

[b] *For a description of the cases, see appendix B.*

[c] *See appendix B for details on the method.*

[d] *For details on the Liberia case, see appendix B, figure B-1: Liberia: Regime Crisis Case.*

Level of Urbanization

Although the absolute level of GDP per capita was not a significant predictor of state failure, when combined with the level of urbanization—as measured by the proportion of population living in urban areas—the impact was statistically significant. Having a high proportion of urban population increased the risk of political crisis only in countries whose GDP per capita was below the average for Sub-Saharan Africa. Among such low GDP per capita nations, the risk of failure was twice as high as for countries with higher levels of urban population.

Interestingly, the effect of the share of population in urban areas on failure risks becomes favorable in countries with higher levels of GDP per capita. Other things being equal, for countries that had—by Sub-Saharan African standards—above average GDP per capita, those that also were above average in their proportions of urban population were only one-fifth as likely to fail as those that had lower levels of urbanization. In sum, countries with either high GDP per capita and higher levels of urbanization—relative to other Sub-Saharan African countries—or low GDP per capita and low urbanization were more stable; it was only when relative levels

of urbanization were "out of balance" with relative levels of economic development that political risks increased.

This confirms the bimodal effect of urbanization on political risks described by Jack Goldstone in his work on early modern European states;[13] namely, that if the economy is doing well, and urbanization takes place in the context of good employment opportunities, then migrants to cities are socialized into an urban context that they view as rewarding hard work and promising a better future. This is politically stabilizing. In contrast, if the economy is doing poorly and urban migrants find poor opportunities for employment, then migrants are socialized into an urban context that is frustrating and that they view as hostile and unresponsive. This situation greatly aggravates the risks of political crisis.

Table 3: Sub-Saharan Africa Model Results

Key Variables	Countries at Greater Risk	Countries at Lesser Risk	Relative Risk of Failure
Material Living Standards Change	Negative annual GDP per capita change	Positive annual GDP per capita change	2.0
Trade Openness (imports+exports)/ GDP	Below median	Above median	1.9
Level of Democracy	Partial democracies	Autocracies	11.0
	Full democracies	Autocracies	2.6
Level of Urbanization	High urbanization and low GDP per capita	Low urbanization and low GDP per capita	2.0
	Low urbanization and high GDP per capita	High urbanization and high GDP per capita	4.9
Colonial Heritage	Not French	French	2.6
Ethnic Discrimination	Higher	Lower	1.9

Ethnic Discrimination

The presence of communal groups that are subject to significant economic or political constraints appears to increase the risks of political failure, all other things equal, by almost a factor of two. However, this result was only weakly statistically significant and should be viewed as suggestive rather than conclusively demonstrated.

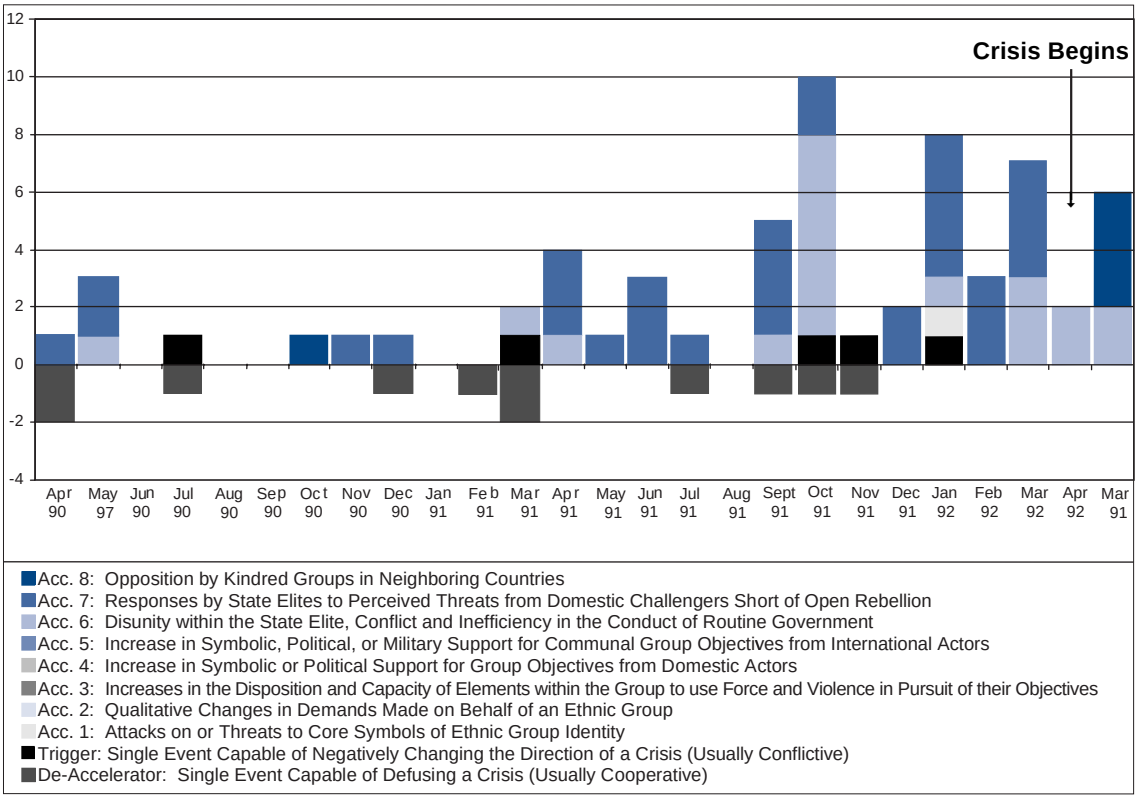
The Sub-Saharan Africa model had roughly the same accuracy as the global model—about two-thirds—in discriminating between state failure and stable cases[14] but resulted in substantially reduced "false positives" for Sub-Saharan African countries.[15]

III. Transitions to Democracy and Autocracy

Trends

Institutionalized democracies have increased significantly in number since the late 1980s. At the end of the Cold War, the number of full democracies in the world system exceeded the number of autocracies for the first time since World War II. As of 1991, full democracies numbered 57, compared with 55 autocracies. By 1996 the number of full democracies

Figure 11: Former Zaire Ethnic Conflict (Accelerators, De-accelerators, and Triggers)



had increased to 71, whereas autocracies had declined to 49. The post–Cold War transition—which Samuel Huntington calls "the third wave of democratization"[16]—also has seen the establishment of a large number of partial democracies. In 1996 there were 27 such polities, double their numbers in the 1980s.

The long-run trend by which democracies have come to outnumber autocracies has two sources. One is the significant number of new democracies established in the post-Communist states. The other, and more important factor, is that many countries that tried and failed to establish democratic polities tried again. South Korea, for example, shifted from autocracy to full democracy in 1960, but a year later lapsed back to autocracy. In 1963 it shifted again to partial democracy but returned to autocratic rule in 1980. South Korea's most recent transition began in the mid-1980s and was completed in 1988 when it became, and has thus far remained, a full democracy. In short, South Korea accounts for three transitions toward democracy and two cases of backsliding to autocracy. Pakistan, Turkey, Thailand, and Bangladesh—all full or partial democracies by 1997—also made three or more democratic transitions between 1955 and 1996.

Transitions are defined in terms of shifts among the three categories of regime type—full democracy, partial democracy, and autocracy. For the analysis of trends, the Task Force defined transitions to democracy as shifts from autocracy to either partial or full democracy as well as shifts from partial to full democracy.[17] These transitions are said to be *stable* if the regime does not regress toward autocracy in the first five years after the initial transition.[18] A regime is *unstable* if it regresses toward autocracy within five years. Thus, a country that changes from autocracy to partial democracy, then two years later transitions from partial to full democracy, is counted as having made one stable transition. A country changing from partial democracy to autocracy and remaining an autocracy for five years is counted as a stable downward transition; whereas a country that shifts from democracy to autocracy, then within five years returns to partial democracy, would be counted as an unstable downward transition.

Table 4: Democratic Transition Success Rates, by Region

Region	Total Transitions, 1957-1991	Percent That Survive for Five Years or More
Europe	14	93
Latin America	24	83
Newly Independent States	12[1]	67
Asia	14	64
Africa	10	40
TOTAL	74	73

[1] Uzbekistan, Turkmenistan, and Tajikistan did not make initial transitions to democracy.

Four major observations can be made about the evidence:

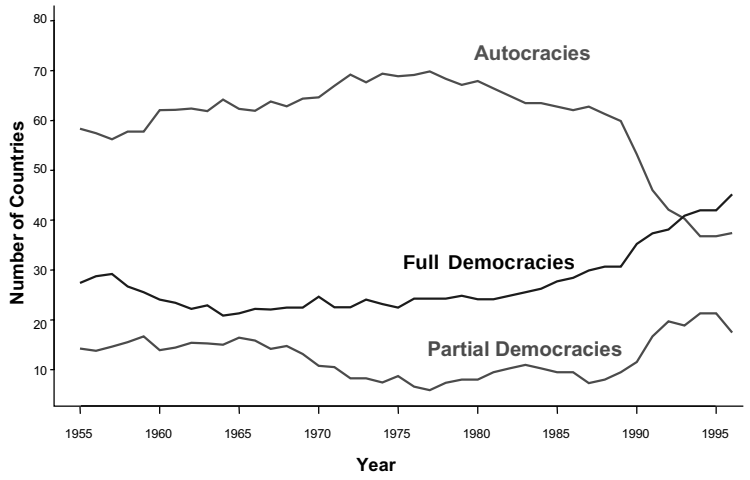
- **Many democratic transitions do not endure.** Between 1957 and 1991 there were 54 durable transitions— that persisted for at least five years—toward full or partial democracy in independent countries, including 16 democracies established during the period 1989-91 in the Soviet and Yugoslav successor states. Another 20 democratic transitions were attempted between 1957 and 1991 but reverted to autocracy during their first five years. An additional 33 democratic failures—durable democracies that shifted toward autocracy for at least five years—occurred.

- **Post–Cold War democratic transitions may be more durable than earlier ones.** Before 1986, 24 regimes made durable transitions toward democracy, more than offset by 44 failures—reversion to autocracy—of full or partial democracies.[19] The 38 durable transitions toward democracy between 1986 and 1991, however, were offset by only nine failures. A more precise comparison looks only at the outcome of democratic transitions that were attempted between 1957 and 1991. Of the 36 transitions that occurred before 1986, 12 countries (33 percent) reverted to autocracy within five years; whereas, for the 38 transitions in 1986 or later, only eight (21 percent) failed to survive. The short-term survival of democratic transitions thus appears to have increased slightly in the post–Cold War period, although the difference is not quite statistically significant.

- **World regions differ substantially in the success of democratic transitions.** Before 1986, Africa south of the Sahara had only one durable democratic transition and the record in Asia was only slightly better. In Latin America and the Caribbean, half of the pre-1986 transitions endured to early 1997. The success rates of recent democratic transitions are highest in Asia—where Cambodia is the only recent democratizing regime to backslide (in 1997)—and in Latin America. Despite a great deal of concern about the durability of the post-Communist states, 14 of the 19 that became partial or full democracies during 1989-91 have maintained democratic regimes. The exceptions are Azerbaijan and Armenia—where democratic governance was undermined by civil war—and Belarus, Kazakhstan, and Albania where it was subverted by chief executives who dissolved or emasculated legislatures that constrained their power.

- **Partial democracies are less durable than either autocracies or full democracies.** There are inherent political contradictions in most partial democracies—a tension between demands for greater and more effective participation on the one hand, and the desire of political elites to maintain or enhance their control. Most partial democracies transition within a decade or so either to full democracies or revert to autocracy.

Figure 12: Democracy Trends, 1955-96



Variables Tested for the Democratic Transition Models

Demographic
Infant mortality, normalized
Secondary school enrollment ratio
Youth bulge, normalized
Annual change in infant mortality

Political/leadership
Ethnic character of ruling elite
Years national leader was in office
Regime durability
Democracy minus autocracy index
Autocracy index
Regime duration
Political rights
Civil liberties

Economic
Real investment share of GDP, normalized
Trade openness
Land burden
Real GDP per capita, normalized

Models

In developing statistical models of transitions, the Task Force used a narrower definition of transition than it did for the analysis of trends.[20] Because crossing the autocracy-democracy divide was thought to be the more critical transition, and because the number of shifts between partial and full democracy was relatively small, the Task Force decided to limit its statistical analysis to transitions from autocracy to partial or full democracy and those from partial or full democracy to autocracy. In this analysis, models were developed that attempted to answer two research questions:

- What social, economic, and political conditions differentiate countries that make durable democratic transitions from others?
- What conditions characterize countries in which democratic regimes fail to succeed?

These questions are different from the issue of the conditions of "state failure" because the democratic transitions are defined and measured differently from state failures. Moreover, few transitions from autocracy to democracy, and only about half of the transitions from democracy to autocracy, meet the criteria of adverse regime transitions.

Transitions from Autocracy to Democracy.[21]

A total of 39 transitions to democracy were available for analysis and were matched with 68 control cases—autocracies in the same region that did not shift to democracy during the matching years.[22] Experts examined the state failure database to identify variables that they thought should contribute to democratic transitions, and statistical tests were used to determine which of them differentiated significantly between the transitions and the controls.

Then various combinations of these variables were analyzed to determine the most efficient set. From more than 60 models analyzed, the one with the highest accuracy included two variables: relatively low land burden—an index that is highest for

Table 5: Democratic Transition Model Results

Autocracy to Partial or Full Democra		
Key variables	Countries More Likely To Transition	Countrie To T
Regime durability	Below median	Abov
Land burden	Below median	Abov
Partial or Full Democracy to Autocra		
Key variables	Countries More Likely To Transition	Countrie To T
Infant mortality, normalized	Above median	Belov
Regime durability	Below median	Abov

Investigating Links Between Conflict and the Environment

The efforts reported here build on a thriving set of research programs at a variety of institutions investigating the environment's role in violent conflict. Early hypotheses centered on environmental degradation and resource depletion directly precipitating violent conflict. Two major sets of case studies in the 1990s suggested that environmental causal pathways to conflict were more complicated. Environmental variables—which alone were neither necessary nor sufficient to cause conflict—were found to play multiple roles along a complex causal chain involving intervening social, political and economic variables.

- *Dr. Thomas F. Homer-Dixon of the University of Toronto found that when "environmental scarcity" of renewable resources did play a causal role, it was most likely to be through impacts that were "sub-national, persistent, and diffuse." These impacts indirectly contributed to acute conflict by exacerbating more familiar sources of conflict—for example, ethnic divisions or relative deprivation.*

- *Drs. Guenther Bachler and Kurt Spillman, codirectors of the Swiss Environmental Conflicts Project (ENCOP), identified seven types of "environ-mentally-induced conflict" in a typology that distinguished levels of conflict and parties to conflict. ENCOP case studies also highlighted "environmental conflicts" as traditional conflicts "induced by environmental degradation."*

As the number of case studies accumulated through these projects and other efforts such as those at the International Peace Research Institute, Oslo, and Columbia University, it became clear that intervening "institutional capacities," or coping mechanisms, to address environmental challenges were critical in determining whether conflict would occur.

Until very recently, a gap in the research program has been the use of statistical analysis examining a large number of countries over time. The need for this kind of study is made clear by the highly qualified conclusions that the case studies produced. The work of the State Failure Task Force is one of only two such studies undertaken to date, the other being the work of Hauge and Ellingsen. In addition, ours is the only study to explore systematically the interactions between environmental change, vulnerability, and capacity in this context, and the only study to use quantitative measures to attempt to uncover these relationships.[a]

[a] *See appendix D for selected bibliography.*

countries with largely agricultural populations and scarce cropland—and low durability of the regime before the transition. This model correctly classified two-thirds of the cases in a set of 39 transitions and 68 controls. The best three-variable model correctly classified two-thirds of the cases and showed that durable democratic transitions were most likely when infant mortality was relatively stable, autocracy was already restricted, and land burden was low.

These models suggest some interesting substantive findings. The regimes most likely to undergo stable democratic transitions during the last 40 years:

- Already had shifted away from purely autocratic forms of government.
- Tended to have had less durable regimes; that is, they had attempted previous political experiments.

Transitions were also more likely to occur in societies with greater economic capabilities (measured by low land burden) and less short-term variability in quality of life (measured by changes in infant mortality).

Once a country has transitioned to democracy, the Task Force found that the likelihood that the transition will be stable depends on several factors:

- Countries whose democratic transitions are most likely to succeed have greater annual improvement in infant mortality, a lower level of infant mortality, greater trade openness, a higher proportion of the population in urban areas, and more years of experience as a democracy.

Transitions from Democracy to Autocracy.[23]

A total of 35 democratic failures—transitions from full or partial democracy toward autocracy—were available for analysis and were matched with 98 control cases;[24] that is, democratic countries in the same region that did not fail during the matching years. The two-variable model with the highest accuracy—nearly three-quarters of cases correctly classified—included infant mortality normalized by world average and regime durability. High infant mortality and low regime durability characterized transitions to autocracy.

It is not surprising that newer democracies—those of low durability—are more likely to fail than long-lived ones, based on the evidence that many democracies fail during their first five years. The role of infant mortality—and by extension, other aspects of quality of life—in raising the prospects for democratic survival is consistent with the results of the general models of state failure.

IV. The Role of the Environment in State Failure

Goals and Hypotheses

We set out to determine whether the proposition that there is a measurable connection between environmental degradation

and state failure was true. Our goals were to:

- Test the argument with data drawn from all countries, over an appropriate time period. Although a number of scholars in recent years have claimed that there is a connection between environmental degradation and political violence, these claims have been largely based on individual case studies.[25] These individual studies, albeit largely of high quality, fail to rigorously test the correlative claim.

- Determine whether it was possible to offer analytical guidance to decisionmakers as they face new security challenges. US policymakers—in the State Department, National Security Council, Defense Department, and other agencies—have increasingly framed environmental issues in security terms.[26] No clear consensus exists, however, as to what kinds of environmental changes are most important, what factors make a given level of environmental change more or less dangerous, or what types of policy interventions are most promising.

- Construct a specific model, and test it with empirical data, to provide the foundation for monitoring and forecasting potential trouble spots, where environmental deterioration could potentially enhance the likelihood of state failure.

Two primary expectations guided our analysis:

- We did not expect to find any direct, measurable correlation between environmental change and state failure. Although this expectation is at odds with some of the literature,[27] we were guided by the following logic: models of environmentally induced political violence all include numerous intervening variables that are held to interact in a complex fashion.[28] The large number of intervening variables makes it hard to find strong direct relationships between the environment and state failure. The complex interaction means that whatever relationships do exist are likely to be different from case to case. As a result, the linkages between environmental change and state failure are unlikely to be discovered by simply adding environmental variables to a state failure model.[29]

- We did expect that environmental change might have a significant, negative impact on one of the factors associated with state failure in the general model. In particular, we sought to explore whether environmental degradation would have an impact on quality of life measures such as infant mortality. If so, then this would demonstrate an important, though indirect, connection between environmental degradation and state failure.

Analytically, we conceived of the factors interacting in the following manner: a given change in environmental conditions generates an impact on a society that varies according to the underlying environmental conditions—a society's vulnerability—and which is mediated by a nation's capacity to respond effectively. Where capacity is high, harm will be avoided.

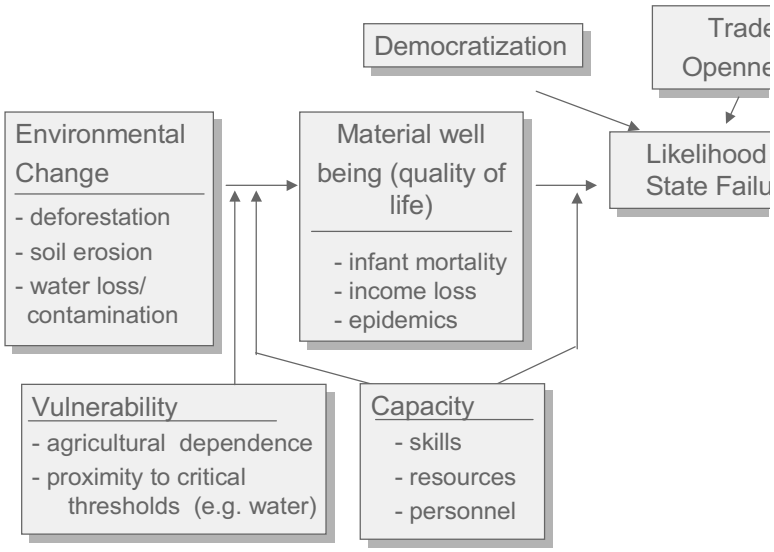
To illustrate, consider crop yields as the impact and drought as the environmental change. Vulnerability is the degree to which crop yields might be expected to fall in the absence of effective intervention. It might be measured through extent of irrigation or sensitivity of crops to rainfall. Capacity is the degree to which the government and social actors are able to lower the actual impact, and might be measured as the size of the government budget, number of scientifically trained experts, or extent of communications infrastructure.

To be even more concrete, for the 1991-1992 growing

Figure 13: Mediated Environmental Model

The relationship can be expressed as *Impact = a function of (environmental change, vulnerability, and capacity), where*

- Environmental change is a change in environmental resources.
- Vulnerability is the magnitude of the potential impact per unit of change in environmental conditions.
- Capacity is the ratio of actual impact to potential impact.



This formula provides an analytic framework for understanding the key relationships among environmental change, vulnerability, and capacity for response. Given data limitations and the lack of appropriately denominated indicators, we tested a simple formulation of the model in which environmental impact is a linear function of environmental change, vulnerability, and capacity.

season, El Niño–driven droughts were forecast for northeastern Brazil and for Zimbabwe, with more or less equivalent lead times given to decisionmakers and a comparable projected and actual change in environmental resources—rainfall. The vulnerability—the potential drop in agricultural production divided by loss in rainfall—was also about the same. However, the net social impact, or actual loss in output, was very small in Brazil but quite high in Zimbabwe, where 80 percent of the maize crop was lost. Many analysts attribute this difference to different levels of capacity in the two settings. Officials in Brazil acted on the knowledge early, implementing effective strategies, whereas in Zimbabwe the information was never used, and no responsive strategies were developed.[30]

Findings

Environmental change does not appear to be *directly* linked to state failure. To determine whether it was possible to find a statistical correlation between environmental change and state failure, we tested variables that measured deforestation and freshwater supply, but both failed to generate significant results. This was consistent with our hypothesis that the more direct effects of democratization, trade openness and quality of life—measured by infant mortality—had such a strong impact on state failure that they masked any impact of environmental deterioration.

This result is at odds with recent work by Hauge and Ellingsen,[31] the only other study we are aware of that employs statistical tests to evaluate claims about the direct impact of environmental harm on political violence. Hauge and Ellingsen found a significant impact from deforestation, soil degradation, and freshwater access, results that we believe are due to differences in how the dependent variables are operationalized and how the independent variables are used. Some of these differences are potentially large enough to account for the different results by themselves; taken together they make the two models essentially incomparable. Because the state failure model covers a greater time period and includes trade openness as an explanatory variable, we think its results have more validity. Nevertheless, the Hauge and Ellingsen model shows that there is more than one way to approach these questions, and we welcome the opportunity for scholarly debate.

Environmental change is significantly associated with changes in infant mortality. To investigate the merits of the mediated model, we assembled data on environmental change, vulnerability, and state capacity. Because of data limitations, we limited our scope to the period 1980-90; extending the time frame back further would have seriously reduced the number of countries and variables available for testing.

We chose infant mortality as the dependent variable because of the availability of data, the high significance of infant mortality as a factor associated with state failure, and the high correlation of infant mortality with a number of other measures of material well-being. We would have preferred to use a basket of indicators that captured the level of material well-being or quality of life, but the only well-being indices we located covered too few countries, spanned too few years, or included factors that were not relevant to our analysis.

Table 6: Hague and Ellingsen and the State Failure Study: Differences

	Study
	Hague and Ellingsen
Operationalization of Dependent Variables	
Definition of failure	Used incidence of civil w in one model; armed conflict in another
Overall time period	1980-1992
Unit of observation[1]	Each year of civil war or armed conflict
Use of Independent Variables	
Treatment of deforestation variable	Categorized
Range of variables included	Some overlap with State Failure, but nothing analogous to trade openn

[1]This is a major difference. The State Failure Task Force chose to develop a model tha outbreak of state failure. Hauge and Ellingsen's model, in effect, combines out break asked not only to estimate the likelihood of when a civil war will start, but also when

Once the data were assembled, we screened potential capacity and vulnerability variables by computing their correlation with infant mortality. Those that were significantly correlated—telephones per capita, population in subsistence agriculture, and land burden—were then tested in combination with an environmental stress variable in a multiple linear regression model.[32]

As we expected, deforestation proved to be statistically significant only when tested in a model that included measures of vulnerability and capacity. For given levels of vulnerability, capacity, and baseline infant mortality rates, we found that the greater the loss of forest cover, the higher the increase in infant mortality rate.

The results for the model using soil degradation as the environmental stress were more complex, and no linear relationship could be measured. We obtained significant results, however, by multiplying the rate of degradation by its severity and including it as an interactive term. The results suggest that soil degradation has a negative impact when severe degradation occurs at a rapid rate; otherwise the impact is positive. One possible interpretation of this finding is that the same practices that induce soil degradation—such as agricultural production—might have a positive net impact, for example, by improving nutrition or incomes, if the degradation does not proceed too rapidly.[33]

Insights

One major insight that emerges from the analysis is that available measures of environmental degradation do not currently serve as a direct signal of impending state failure. In part, this is a function of the long, complex chain of association between environmental change and state failure, with a number of factors intervening along the way. Those factors are strong enough to push some societies blessed with benign environmental conditions into failure and to prevent other societies suffering serious environmental damage from slipping into political instability. This finding is also a function of the

Variables Tested for the Environmental Model

Environmental Change
Deforestation
Soil degradation
Change in agricultural land
Access to fresh water (urban, rural, and total population)
Fraction of freshwater reserves withdrawn
Sulfur dioxide emissions
Population density

Vulnerability
Percent of population engaged in subsistence agriculture
Land burden: (farmers per area of cropland) x (farmers per labor force)
Storm damage
Share of national income by lowest 20 percent of population

Capacity
Secondary school enrollment ratio
Adult female literacy
Public expenditures on education
Telephone lines per capita
Bureaucratic quality
Corruption
Number of bribery cases
Law and order tradition
GDP per capita
Debt service
Rail mileage per square mile
Rail-ton miles per capita
Road density

Environmental Data Limitations

Our analysis was seriously constrained by the paucity of available data. Whereas the overall state failure model was able to test some 75 economic, political, and demographic variables, the environment model could test only a handful. This data constraint meant that some important environmental factors could not be examined. For example, water quality—consistently mentioned in the literature as the most serious environmental problem facing developing countries—could not be included because reliable time series data are available for only 38 countries.a Air quality suffers from similar deficiencies.

Useful indicators of vulnerability were also scarce. Because the best environmental change indicators—deforestation and soil degradation—that we had were related to terrestrial ecosystems, we were able to rely on vulnerability measures that tapped the degree of sensitivity to agricultural perturbations. However, measures relevant to other environmental shocks, such as declines in air quality, would have been harder to construct.

The available measures of capacity were especially disappointing. The ideal measure, in our view, would take into account the financial resources, quality and extent of infrastructure, and knowledge and skills of public and government officials available for monitoring, assessing, and responding to major environmental problems. Despite the great attention paid to issues of capacity building in recent years,[b] we were unable to identify any useful indicators that came close to capturing this concept and, instead, had to rely on proxies that imperfectly measured a few aspects of capacity.

[a] Even for these countries, data are taken from single-point monitoring stations.

[b] See, for example, the UN Development Programme's Capacity 21 program.

seriously limited data at our disposal. On balance, we cannot say how large an impact environmental damage has on the risk of state failure.

Nevertheless, the results of our analysis provide evidence for an indirect connection between environmental change and state failure. Deforestation and soil degradation appear to diminish the quality of life, as measured by infant mortality rates, for low-capacity states that are socially vulnerable to disruptions in soil ecosystems; and infant mortality has been shown to have a direct impact on the likelihood of state failure.

Caveats on the Findings

While we believe that the results of the mediated environmental model are useful and significant, the model has several limitations:

- The process of converting analytic concepts into measurable variables has necessarily resulted in variables that are more narrow and arbitrary than the analytic constructs that they represent. This is most true for our core capacity variable—telephones per capita, which we recognize to be a very limited measure of governmental and societal response capability—but to a degree it is true for all the variables.

- The findings represent a general tendency that applies to the set of all countries for which data were available, over the ten-year period studied. That does not mean that this tendency will be true for each individual country at every point in time. Some countries might experience far more direct connections between environmental change and state failure than we observe; other countries might experience less connection between environmental change and infant mortality than our results suggest.

- Environmental data limitations mean that our conclusions are far from the last word. We simply did not have measures for some very important environmental changes—including water quality, with its impact on public health—that might prove more significant as precursors of state failure than those we tested. Data constraints also prevented us from testing whether state failure is associated with aggregate processes of environmental deterioration, encompassing the degradation of soil, air, and water systems.

Implications of Phase II Findings for Forecasting and Policy

The main result from retesting and refining the global model is a solid confirmation of the work undertaken in the first phase of the Task Force's work. Even with an updated and expanded problem set, different control sets, and more refined measures of democracy, the basic global model continued to accurately classify roughly two-thirds of historical cases. Moreover, the same independent variables emerged as statistically significant in a variety of retests.

The major implication for forecasting is that as far as statistical data are concerned—given current limitations in accuracy and coverage for global data—using a large number of variables does not add to the effectiveness of forecasting models. In many cases, we found that the gaps in either the temporal or geographic range of particular variables were so great that any possible gains in prediction were offset by statistical uncertainties or missing data problems associated with measuring those additional variables. Thus, in all models and regional sub-models, a handful of variables emerged as providing significant power in discriminating between state failures and stable cases over the past 40 years. Although many additional variables—including those measuring nutrition, education, droughts, and civil rights—showed significant correlations with risks of state failure, they did not add statistical power to models based on our key variables. Those variables, which consistently emerged in a wide variety of models, are material living standards, trade openness, and democracy, and in more limited circumstances, youth bulge, regime duration, ethnic dominance or discrimination, and the urban proportion of the population.[34] We shall have to wait until the accuracy and coverage of global data series improves before we can gain further accuracy by building more complex models. In the meantime, there is a compelling need to improve global and regional data on these key dimensions, and on many other social, economic, political, and particularly, environmental conditions.

A secondary implication is that the accuracy of statistical models forecasting state failure risks two years in advance remains at a level that is useful, but insufficient for refined predictions. In order to bridge the gap between the two-thirds accuracy of our statistical model, and the better than 90-percent accuracy required for effective policy responses, the skills of individual country analysts and policymakers in assessing rapidly changing local conditions remain absolutely crucial.

The mathematical data analysis cannot prove causality, but the correlations are consistent with causal interpretations. Our findings also suggest policy implications that are interesting and complex, although the best focus and mix of policy responses will, of course, vary from case to case.

Involvement in international trade, as measured by trade openness, is associated with a lower risk of state failure in virtually all states and all contexts. This finding suggests that policies or measures—including internal factors such as dependable enforcement of contracts, modest or low corruption, and improved infrastructure, as well as bilateral or multilateral efforts to eliminate trade barriers—that help to foster higher levels of international trade could help prevent political crises. Interestingly, it appears that it is the involvement in international trade itself, and not the eventual prosperity that such trade provides, that is the key to this effect. The work of Etel Solingen has shown that free trade, if sustained, helps bring together coalitions of elite actors that support the rule of law and stable property relationships, as a condition for building wealth.[35] Such

coalitions may or may not be democratic, but in either case, they promote political stability.

Partial democracies—particularly in lower-income countries where the quality of life remains poor—are associated with elevated risks of failure. Although full democracies and autocracies are fairly stable, the in-between forms of government are at high risk of undergoing abrupt or violent change. This suggests that while a policy of promoting democracy may eventually lead to a world of stable liberal states, one cannot presume that the inevitable intermediate stages will also be stable. Policymakers need to be particularly attentive to the risks of failure in such states, and should seek and encourage progress toward full democracy. Moreover, if helping to increase the odds of stability in such states is a goal, then policymakers need to focus on developing policies that help foster international trade and on supplementing democratization programs with broad development programs that help improve the overall level of material living standards.

Material living standards have an undeniable effect on the risks of state failure. In some models, it is the overall level of material living standards that emerges as important; in other models, such as that for Sub-Saharan Africa, it is the direction of change that appears crucial. In either case, the policy implication is that efforts to improve material living standards are a significant way to reduce risks of state failure. In Sub-Saharan Africa, it turns out that high levels of urbanization reinforce this effect—for states with high levels of urbanization, states experiencing growth in GDP per capita have only a fraction of the risks of state failure of those states experiencing economic stagnation or decline.

Despite the prevalence of ethnic conflicts—especially in Sub-Saharan Africa—ethnic discrimination or domination is not the sole, or even the most important, correlate of state failure. Because ethnic factors do not emerge as the most powerful—or most statistically significant—factors associated with state failure, they bear monitoring, but other policy levers may be more readily available and more effective.

Environmental stress, vulnerability, and capacity form an interdependent triad that affects quality of life and, indirectly, the risk of state failure. Our findings imply that analysts concerned with the social impact of environmental change need to monitor not simply the environment, but also changes in a country's vulnerability to environmental changes and its capacity to cope effectively with them. The increased appreciation of the need to develop indicators of environmental change and of sustainability should be complemented with equally vigorous efforts to develop useful indicators of vulnerability and capacity, where the recent track record has been less encouraging. At the broadest level, our findings also suggest that when it comes to minimizing declines in quality of life, increases in capacity and reductions in vulnerability are equally appropriate targets for policy intervention as increases in environmental protection.

Newer democracies, especially in countries where quality of life is relatively low, are more likely to fail than long-lived ones. The Task Force's models and data can be used to inform policymaking about the conditions under which democratic transitions are likely to succeed or fail. Most contemporary democracies in Latin America, Asia, and Africa established democratic institutions one or several times, then reverted to autocratic rule before making their most recent transitions to democracy. The problem-ridden history of democratic transitions in these regions raises questions about the future durability of newly established democracies there and in the post-Communist states. Analytic results suggest it is crucial that international support for democratic institutions be reinforced by policies that promote improvement in the quality of life.

Future Directions

Potentially fruitful future analytic directions that are suggested by the Phase II results include:

- Forming a better understanding of the conditions of successful democratic transitions. Initial results suggest that successful democratic transitions tend to be preceded by political experimentation–including previous unsuccessful attempts to establish democratic institutions–and to occur in countries where agricultural stress is low and material living standards are higher. On the other hand, backsliding to democracy tends to occur within a few years after democratic institutions are introduced, and in countries with relatively low quality of life and high agricultural stress. Analyses are needed of the extent to which successful democratic transitions depend on improvements in the quality of life, and economic performance generally, during the early years. Models of these relationships should also take account of factors such as elite ethnicity, urban growth, and youth bulge, which have been shown to correlate with other kinds of state failure, especially revolutionary and ethnic wars.

- Further developing the concept that the impact of environmental degradation on state failure is mediated by vulnerability and capacity, and more thorough testing of the model. Additional steps would include:

  → Constructing additional indicators of environmental change—such as water and air quality—vulnerability, and capacity from currently available sources.

  → Building a set of "watch lists" for specific ongoing environmental threats that would focus attention on environmental deterioration in countries with high vulnerability and low capacity.

  → Developing a core set of environmental indicators—measured consistently across countries and over time—that could be used in future analyses. This effort would include using the next generation of remote-sensing satellites to gather terrestrial and atmospheric data and using intensive on-site monitoring to build an adequate database for other environmental problems such as water quality, air quality, and

chemical hazards.

→ Developing models that capture regional variation—or localized "hot spots"—within a country that are masked by national level analysis. We know that the environmental impact on material quality of life will be stronger if there is a spatial correlation among the variables. For example, if a given unit of land has a high rate of deforestation, a high land burden, and poor institutional capacity, we would expect a larger local impact on infant mortality, an hypothesis that could be tested using currently available high-spatial-resolution data sets.

→ As additional data become available, continuing to test the hypothesis that environmental damage directly contributes to the likelihood of state failure.

- Developing a more detailed concept of "state capacity" to test as a mediating factor in general and regional models. Building on the results of the mediated environmental model, further examine and develop in more depth the concept of state capacity, develop quantitative measures that tap this dimension, and incorporate this concept as a mediating factor. We should also seek or develop data sets that are better able to capture state capacity.

- Investigating the usefulness of pilot studies of event data for bridging the gap between model-based risk assessments and "early warnings." The general models of state failure identify risk factors measured two years before the expected onset of failure. Even the best models identify a substantial number of false positives and fail to predict correctly some failures. The goal is to supplement general models with early warning models that track the immediate precursors of failure and provide more accurate and timely warnings than do risk assessments that are based on background conditions. Specifically, monitoring of events should concentrate on situations judged to be at high risk through expert- and model-based analysis, and statistical techniques should be applied to study the clustering of events before a crisis.

- Investigating the impact of international support on the risk of state failure. Many policymakers and analysts assume that bilateral and multilateral policies can forestall some state failures and minimize the severity of others. Previous Task Force analyses have assessed the impact of some kinds of international economic policies—such as IMF standby agreements—on the likelihood of state failure, but these analyses have not shown strong and consistent results. The impact of other kinds of international engagement, such as diplomatic and military support, development programs, and assistance with institution building remain to be studied. Appropriate data and indicators need to be gathered and tested in new models. Because the objectives and hence the likely outcomes of international policies have changed since the peak of the Cold War, such models should distinguish between pre- and post–Cold War patterns of international policy and their consequences.

Appendix A: Global Model and General Material

Defining State Failures and Control Cases

State Failure

State failure and state collapse are new labels for a type of severe political crisis exemplified by events of the early 1990s in Somalia, Bosnia and Herzegovina, Liberia, and Afghanistan. In these instances, the institutions of the central state were so weakened that they could no longer maintain authority or political order beyond the capital city, and sometimes not even there. Such state failures usually occur in circumstances of widespread and violent civil conflict, and are often accompanied by severe humanitarian crises. In a general sense, they are all part of a syndrome of serious political crisis which, in the extreme case, leads to the collapse of governance.

Only 18 complete collapses of state authority have occurred during the last 40 years, too few for meaningful statistical generalization. Therefore, the Task Force broadened its focus and sought to identify systematically all occurrences of partial as well as complete state failures that began between 1954 and 1996. We began from existing compilations of data on revolutionary and ethnic conflicts, regime crises, and massive human rights violations of the types categorized as genocides and politicides (political mass murders). An initial list—the basis for the Phase I analysis—was critically evaluated, updated, and refined for the present study. The four types of internal wars and failures of governance are:[36]

- Revolutionary wars. Episodes of violent conflict between governments and politically organized challengers that seek to overthrow the central government, to replace its leaders, or to seize power in one region. From the 1950s through the late 1980s, most revolutionary wars were fought by guerrilla armies organized by clandestine political movements. A few, like the Iranian revolution of 1978 and the student revolutionary movement in China in 1989, were mass movements that organized campaigns of demonstrations. These mass movements are included only if one or both parties used substantial violence.

- Ethnic wars. Episodes of violent conflict in which national, ethnic, religious, or other communal minorities challenge governments seeking major changes in their status. Most ethnic wars since 1955 have been guerrilla or civil wars in which the challengers sought independence or regional autonomy. A few, like those in South Africa's black townships in 1976-77, involved large-scale, violent protests aimed at sweeping political reforms. Warfare between rival community groups is not considered ethnic warfare unless

it involves conflict over political power.

- Adverse or disruptive regime transitions. Major, abrupt shifts in patterns of governance, including state collapse, periods of severe elite or regime instability, and shifts away from democratic toward authoritarian rule. Some are preceded by revolutionary or ethnic wars as in Cuba 1959 and Liberia 1990. They also may precipitate internal wars and be followed by massive human rights violations. They are analytically distinct from internal wars, however, and sometimes occur with minimal open violence. Note that abrupt nonviolent transitions from autocracy to democracy are not considered "adverse" and thus are not included as failure cases.

- Genocides and politicides. Sustained policies by states or their agents–or in civil wars, by either of the contending authorities—that result in the deaths of a substantial portion of a communal or political group. In genocides the victimized groups are defined primarily in terms of their communal (ethnolinguistic or religious) characteristics. In politicides victims are defined primarily in terms of their political opposition to the regime and dominant groups.

The 233 internal wars and failures of governance are the basis of the problem set; that is, the study's dependent variable. The list is known to omit low-magnitude cases but is thought to include all serious cases of these types that began between 1955 and the end of 1996 in all states in the international system with 1996 populations greater than 500,000.[37]

One problematic issue is that internal wars, regime crises, and gross human rights violations often co-occur. Moreover, multiple events of the same type sometimes occur sequentially in the same country. Where wars or crises overlapped or came in quick succession, they were combined. The final problem set consists of 127 *consolidated cases* that include 71 *discrete cases* plus 56 *complex cases*, such as linked sequences of events (of any kind) in which four years or less elapsed between the beginning and end of successive cases. The analyses reported here were based on 125 cases, after excluding two low-magnitude ethnic conflicts.

Appendix D: Environment

Mediated Environmental Model Methodology

For the environmental model, the infant mortality rate in 1990 is assumed to be a function of its baseline in 1980, plus the effects of intervening changes—from 1980 to 1990–in environmental stresses, vulnerability, and capacity factors, while controlling for baseline levels in 1980. Symbolically, the model can be expressed as:

$$IM_t = a + b_o IM_{t_o} + \Sigma(b_i E_i + b_{il}\Delta E_i) + \Sigma(c_j C_j + c_{jl}\Delta C_j) + \Sigma(d_k V_k + d_{kl}\Delta V_k) + \varepsilon$$

Where t is the year 1990, t_0 is the year 1980, IM is infant mortality, E_i are environmental stresses, C_j are state capacities, and V_k are vulnerabilities.

Because the number of explanatory variables in a multiple regression model must be limited to avoid "overfitting,"[38] and because only about 100 countries have nonmissing values for all variables needed to estimate the environmental coefficients, we could include a maximum of 10 independent variables in the model. Each stress, capacity, and vulnerability factor contributes two variables—a baseline and a change measure—with an additional variable required to measure baseline infant mortality rate. Thus, only one variable from each of the stress, capacity, and vulnerability categories can be accommodated in the model, plus at most one additional variable.

To select appropriate covariates for the model we initially screened potential capacity and vulnerability variables by computing their correlation with infant mortality. Those that were significantly correlated were then tested together with an environmental stress variable in a multiple linear regression model of the general type shown above. Each combination of one capacity, one vulnerability, and one environmental stress variable defined a separate regression model. In addition, since it was hypothesized that tropical countries respond differently to environmental stresses, a tropics variable was included.

A lack of data further limited our ability to test variables in the model, and we were only able to test deforestation and soil degradation variables as environmental stresses and telephones per capita, population in subsistence agriculture,

Table D-1: Best Environmental Models

Table D-1: Best Environmental Models

Dependent Variable	Independent Variables		
	Environmental Stress	Vulnerability	Capacity
Infant mortality	Deforestation rate	Percent of population in subsistence agriculture	Telephone per capita
Infant mortality	Deforestation rate	Land burden	Telephone per capita
Infant Mortality	Soil Degradation (severity times rate)	Land burden	Telephone per capita

Table D-2: Environmental Model Coefficients

Variable	Label	Coe
LGIM80	UN infant mortality in 1980 (log)	1.1
WOODSX	C	
LWOODS80	W	
BNK63X	A	
L10BNK63	Ti	
LANDBX	Annual change in land burden	0.0
L10LANDB	Land burden in 1980	0.0
INTERCPT	Constant term	-0.7

Dependent variable: Infant mortality in 1990 (log)
Number of observations: 95
R-squared statistic: 0.97

Table D-3: Environmental Model Output

General Linear Models Procedure

Dependent Variable:

Source	LOGIM DF
Model	7
Error	87
Corrected total	
R-Square	

Parameter	
INTERCEPT	-0.791673
LOGIM80 Log of infant mortality	1.131075
WOODSX Change in forest area (percent)	-0.035194
LWOODS80 Log of woodlands	-0.000303
LANDBX Annualized percent change in land burden	0.010068
L10LANDB 1980 Land burden	0.000087
BNK63X Annualized percent change in telephones per capita	-0.014068
L10BNK63 1980 Telephones per capita	0.507711

and land burden as capacity and vulnerability variables:

- Soil degradation data came from a UN Environment Program data set—Global Assessment of Human Induced Soil Degradation (GLASOD)[39]—that contains assessments by regional soil experts about the severity and rate of human-induced soil degradation. The assessments—completed in 1990—reflect processes of degradation over the previous five to 10 years. We converted the data from GIS format to country values. The severity of soil degradation is classified on a 0-4 scale, with 4 being the most severe. The rate is classified from 0-3, with 3 being the fastest. We created a composite severity score by multiplying each classification score by the corresponding percentage of area and taking the sum. We created alternative scores by weighting the higher classes of degradation more heavily and obtained similar results.

- The deforestation rate—defined as the annualized rate of change in forest area from 1980 to 1990—verged on statistical significance (p=0.06) in models with telephones per capita as a measure of state capacity and either land burden or population in subsistence agriculture as a measure of vulnerability.

- The tropics indicator was not significant, nor were any interactions among the capacity, vulnerability, and stress variables.

None of the soil variables were significant when tested individually or in simple sums (such as the age of land in class 3 plus the age of land in class 4). However, when the interaction between severity and rate was tested we achieved significant results, with telephones per capita as the capacity variable and land burden as the vulnerability variable. The interaction can be interpreted as suggesting that the impact of soil degradation on infant mortality is nonlinear; soil degradation increases infant mortality only when the degradation is severe and takes place

rapidly.

The environmental model was obtained by regressing 1990 infant mortality rates on annual deforestation rates, adjusting for differences in states' baseline (1980) infant mortality and differences in their capacity and vulnerability. The adjustment was accomplished by including as covariates the factors listed in Table D-2 (telephones per capita serves as a surrogate for capacity, whereas land burden is a proxy for vulnerability). The R-squared statistic, which ranges from 0 to 1, measures the fraction of variability accounted for by the model and therefore is an indicator of how well the model fits the data. The value of R-squared in this case is deceptively large, because most of the variability in states' 1990 infant mortality is in fact explained by 1980 infant mortality alone. The model suggests, however, that even after taking this dependence into account, there remains an association between deforestation rate and infant mortality, as indicated by the p-value of 0.06 for deforestation, almost meeting the conventional statistical significance level of 0.05.

[Editor's Note: These excerpts of the Phase II Findings of the State Failure Task Force exclude the Executive Summary portions of Appendices A (Global Model and General Material and D (Environment) and all of Appendices B (Sub-Saharan Africa) , C (Democracy), and E (Data Sources).]

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[1] Esty, Daniel C. Jack Goldstone, Ted Robert Gurr, Pamela Surko, and Alan Unger. *Working Papers: State Failure Task Force Report*. McLean, VA: Science Applications International Corporation, 30 November 1995.

[2] For a list of countries included in the study, see appendix A, table A-1 : Country List.

[3] For a list of state failure cases, see appendix A, table A-3: Historical State Conflicts, Crises, and Transitions, 1955-96.

[4] See appendix A for details on the procedure for revising the set of state failures.

[5] For a list of control cases, see appendix A, table A-4 : Control Cases Used for the Global Model.

[6] See appendix A for details on the logistic regression and genetic algorithm techniques; see Esty, Daniel, Jack Goldstone, Ted Robert Gurr, Pamela Surko, and Alan Unger, *Working Papers: State Failure Task Force Report*. McLean, VA: Science Applications International Corporation, 30 November 1995, for details on neural network analysis.

[7] Jaggers, Keith, and Ted Robert Gurr. "Tracking Democracy's Third Wave with the Polity III Data." *Journal of Peace Research* vol. 31(4):469-482, 1995. For details on the scoring and a list of indicators and weightings for each index, see appendix C, table C-1: Indicators of Institutional Democracy and Autocracy, in the full text report.

[8] For a list of country scores, see appendix C, table C-2: Democracy, Autocracy, and Democracy Minus Autocracy Scores by Country, 1996.

[9] Zakaria, Fareed. "The Rise of Illiberal Democracies." *Foreign Affairs*, vol. 76(6):22-44, 1997.

[10] For a list of control cases, see appendix B, table B-1: Control Cases Used for the Sub-Saharan Africa Model. Sub-Saharan Africa crises are included in appendix A, table A-3, Historical State Conflicts, Crises, and Transitions, 1955-96

[11] See appendix B for further details on the model.

[12] It should be noted, however, that this finding did not have quite as much statistical significance (p=.10) as the other findings in this model.

[13] Goldstone, Jack A. *Revolution and Rebellion in the Early Modern World*. Berkely: University of California Press, 1991.

[14] On the basis of data two years in advance of the crises.

[15] The global model had the best accuracy for Western industrialized countries and poorer accuracy for Sub-Saharan Africa, where it tended to misidentify too many countries as failures.

[16] Huntington, Samuel P. *The Third Wave: Democratization in the Late Twentieth Century.* Norman: University of Oklahoma Press, 1991.

[17] For a complete list of transitions, see appendix C, tables C-3, Transitions From Autocracy to Partial or Full Democracy, or from Partial to Full Democracy, 1957-91, and C-4, Transitions from Full or Partial Democracy to Autocracy, or from Full to Partial Democracy, 1957-91.

[18] This is a minimum criteria. The median age at which democracies regressed toward autocracy in the period studied is four years. The analysis could also be done using a more stringent criterion for stability; for instance, 10 or even 20 years.

[19] Note that failures outnumbered durable transitions because some failures occurred in countries whose democracies were established before 1957 and thus were not counted as transitions for this analysis.

[20] For details on the method, see appendix C.

[21] For a list, see appendix C, table C-6: Transitions from Autocracy to Partial or Full Democracy Used in Model Derivation.

[22] Data were missing for other cases.

[23] For a list, see appendix C, table C-5: Transitions From Full or Partial Democracy to Autocracy Used in Model Derivation.

[24] Data were missing for other cases

[25] For a useful review of these claims, see Geoffrey D. Dabelko and P. J. Simmons. "Environment and Security: Core Ideas and US Government Initiatives." *SAIS Review* 17(1):127-146, 1997.

[26] These developments are covered in the issues of the *Environmental Change and Security Project Report*, Woodrow Wilson Center, Washington, DC.

[27] For example, Robert D. Kaplan. "The Coming Anarchy." *Atlantic Monthly* 44-76, February 1994. For a bibliography on environment and conflict, see appendix D.

[28] Homer-Dixon. Thomas F. *Environment, Scarcity, and Violence.* Princeton: Princeton University Press, forthcoming 1999.

[29] Levy, Marc A. "Is the Environment a National Security Issue?" *International Security* 20(2):35-62, Fall 1995.

[30] Glantz, Michael, Michele Betsill, and Kristine Crandall. *Food Security in Southern Africa: Assessing the Use and Value of ENSO Information.* Boulder, CO: National Center for Atmospheric Research, Environmental and Societal Impacts Group, 1997.

[31] Hauge, Wenche and Tanja Ellingsen. "The Causal Pathway to Conflict: Beyond Environmental Scarcity." *Journal of Peace Research* 35:3, 1998.

[32] See appendix D for details of the method; for a list of models and coefficients, see table D-1: Best Environmental Models.

[33] Of course, our measure of soil degradation is too imprecise, and our time frame is too limited for us to determine whether there is an "optimal" rate of soil degradation. It is entirely possible that extending the time frame from one to two decades, for example, would have a negative impact on infant mortality at all levels of soil degradation.

[34] Youth bulge—a large proportion of the adult population concentrated in the young adult years—was a significant factor in a model of ethnic war that was developed during Phase I. For details, see Daniel Esty, Jack Goldstone, Ted Robert Gurr, Pamela Surko, and Alan Unger, *Working Papers: State Failure Task Force Report*. McLean

VA: Science Applications International Corporation, 30 November 1995.

[35] Solingen, Etel. *Regional Orders at Century's Dawn: Global and Domestic Influences on Grand Strategy*. Princeton University Press, 1998.

[36] For sources and more detailed descriptions, see Esty, Daniel C., Jack Goldstone, Ted Robert Gurr, Pamela Surko, and Alan Unger. *Working Papers: State Failure Task Force Report*. McLean, VA: Science Applications International Corporation, 30 November 1995.

[37] Eritrea and Qatar, which have populations over 500,000, were inadvertently omitted; Luxembourg was inadvertently included, despite falling below our population size cutoff, according to the US Census Bureau's International Data Base. These deviations from the rule do not contribute significant error because the number of countries in the study was large.

[38] A widely used rule of thumb constrains the number to about 10 percent of the sample size.

[39] "Global Assessment Of Human Induced Soil Degradation (Glasod): A Users Guide To The Global Digital Database," UNEP/GRID, July 1, 1991.

Making a Difference at the Intersection of Population, Environment, and Security Issues: A Look at the University of Michigan Population Fellows Program

by Shannon England

Abstract: The University of Michigan Population Fellows Program was established in 1984 to give early-career professionals in international population assistance hands-on experience working in the field. Funded through the United States Agency for International Development (USAID), the program places fellows with organizations that address family planning and reproductive health issues in developing countries. The program aims both to enhance fellows' skills and to build capacity for development of effective and sustainable family planning and reproductive health interventions. Since the program's inception, there have been more than 200 professionals placed in the field, and the program has expanded to include several new initiatives. These include the Population-Environment Fellows Program (PEFP), the Minority-Serving Institutions (MSI) Initiative, and the Population, Environmental Change, and Security (PECS) Initiative. This special report 1) describes each component of the Michigan Fellows Program; 2) explores the rationale for and methods of linking population and environment through the PEFP; and 3) details the lessons learned in three fellowships.

Population Fellows Program

The original Population Fellows Program places professionals in settings throughout the world. Population Fellows work in diverse settings and address a variety of issues. The Program has grown significantly over the years. During the program's first year only five fellows were placed, while now the number of Fellows placed each year ranges from twenty to thirty. Population Fellows work in different types of organizations. Some work for USAID cooperating agencies involved in family planning and reproductive health, such as The Population Council, Pathfinder International, Futures Group International, Inc., CARE, or John Snow Inc. Others work for indigenous organizations in developing countries such as International Planned Parenthood (IPPF) affiliates, government Ministries of Health, and country specific or local non-governmental organizations (NGOs). Population Fellows may also work for USAID itself, in both Washington and in the mission field offices. The types of placements vary also by job responsibilities; Population Fellows may be involved in field-level implementation of projects or in research and resource management. Some Fellows work at a more removed level in program management and evaluation, while still others are involved in policy development and planning.

Population-Environment Fellows Program

A more recent addition to the University of Michigan Population Fellows Program has been the establishment of the Population-Environment Fellows Program (PEFP). The PEFP was founded in 1993 to encourage development professionals to look beyond traditional sectoral interventions towards those that focus on a more integrated approach, specifically, on the links between population and environment. The Program has served the role of facilitating innovative approaches to community development interventions in both reproductive health and environmental resource use. Since the Program's founding, 27 Fellows have been placed in environmental, reproductive health, and community development organizations, as well as with government ministries of health and environment. With training in both population and environmental issues, Population-Environment (P-E) Fellows perform a wide range of activities: performing community needs assessments using participatory

Shannon England is a staff member with the Population Fellows Program at the University of Michigan. Some portions of this special report are drawn from Caroline Stem, "The Population-Environment Fellows Program Documenting Results: A systematic review of Fellows' placements in the field, 1993-1997." Ann Arbor, MI: Population-Environment Fellows Program, University of Michigan, 1997.

rural appraisal (PRA) techniques, undertaking demographic or geographic information system analysis, assisting with buffer zone management, or engaging in policy analysis and development.

Minority-Serving Institutions Initiative

The Minority-Serving Institutions Initiative (MSI) aims to increase the number of students from historically Black- or Hispanic-serving institutions who pursue careers in international family planning or population and environment. To accomplish these goals, the program provides coursework and internships to MSI graduate students to prepare them for a Population or Population-Environment Fellowship. It also offers MSI undergraduates summer internships at US-based organizations working in the fields of international family planning and population-environment. The MSI initiative first began in 1995 as part of a USAID-wide effort to encourage graduates from MSIs to pursue professional careers in the field of development assistance. To date, the Program has placed 25 undergraduate interns and six graduate interns, five of whom have become Population Fellows. The program has the explicit goal of expanding diversity within the ranks of professionals involved in international development assistance, especially in the fields of population, family planning, and population-environment.

Population, Environmental Change, and Security Initiative

The Population, Environmental Change, and Security (PECS) Initiative is the newest initiative of the University of Michigan Population Fellows Program. Established in 1996, the PECS initiative brings together population, environment, and security experts; policymakers; and members of the diplomatic community to discuss the impact of both population and environmental change on security issues. The PECS initiative is a collaborative effort with the Woodrow Wilson Center's Environmental Change and Security Project (ECSP). The initiative aims to combine fellows' field-level insights with ECSP's experience in facilitating policy-level dialogue. The result is a unique interdisciplinary forum for examining demographic and environmental roots of conflict and exploring program and policy options. The initiative has sponsored numerous activities, including: 1) regular seminars and working groups at the Woodrow Wilson Center; 2) a working-paper series within the Fellows Programs; 3) specially commissioned papers and annual reports; and 4) an international symposium series. The planned symposium series for 1999 will focus on developing a research agenda and policy framework for addressing domestic and international migration. Leading researchers in the field will examine the relationship of urbanization and refugee flows to environmental degradation and security concerns. As a result of increased interest from donors and host agencies, the PECS initiative will expand this year for the first time to include a fellow who will specifically work on issues surrounding the intersection of population, environment, and security concerns.

Focus on the Population-Environment Fellows Program

Training and Professional Development

The most important contribution of the Fellows Program to the training and professional development of P-E Fellows is through the work opportunities it provides for them. Host agencies play an important role in mentoring the fellows and challenging them to tackle complex development questions. In addition to the field work experience, the PEFP tries to ensure that Fellows have the technical skills and tools necessary to effectively carry out their work duties. The Program sponsors annual workshops in which Fellows have the opportunity to interact and exchange experience with other Fellows and host agency representatives. Each workshop includes a technical training session to increase Fellows' competency in technical areas, such as institutional capacity-building, monitoring and evaluation, gender programming, and participatory rural analysis. Fellows learn how to apply these skills to their local context and provide important feedback on what they have learned about implementing these techniques during their placements.

Finally, the PEFP has made important strides in stimulating experimentation and increasing knowledge of population and environment. In each workshop, participants (fellows, PEFP staff, and development specialists) have emphasized that the program and the activities fellows are initiating represent a learning experience. No one knows the best method to link population and environment or whether it is judicious to do so. Only through experimentation and innovation, as well as careful follow-up and evaluation, can these questions be clarified.

Technical Assistance to Host Agencies

A second objective of the PEFP is to provide technical assistance to local agencies in the areas of population and environment. Fellows have found that many organizations do not possess the multi-disciplinary technical expertise to effectively bridge population and environment. Moreover, their institutional structures, based on conventional disciplines, do not easily permit comprehensive approaches to development. The technical skills and paradigms that fellows bring to their host agencies are valuable for raising awareness of the potential benefits of linking population and environment, as well as for building organizational capacity to develop intersectoral interventions. Likewise, fellows gain practical experience and expertise from their host institutions.

All fellows have been involved in some aspect of institution-building, whether it be strategic planning and proposal writing within their host agency, training staff and communities in technical issues related to population and environment, or multi-agency capacity building through partnerships. These activities lay important groundwork for P-E and related interventions. In addition to institutional strengthening, fellows have assisted

their host agencies in undertaking community assessments using participatory rural appraisal (PRA), in documenting the lessons of their work, and in developing program models for replication.

Developing Population-Environment Linkage Frameworks

The experimental and innovative nature of the PEFP has earned the program an important position in the P-E arena. Recognizing the need to pilot test the feasibility of linking population and environment at the field level, the program seeks to complement theoretical knowledge with practical experience to determine whether it makes sense to address population and environment together or separately. There are three primary means by which fellows have linked population and

The Population, Environmental Change, and Security Fellowship

A collaboration of the University of Michigan Population Fellows Program and the Environmental Change and Security Project of the Woodrow Wilson International Center for Scholars

The Population, Environmental Change, and Security (PECS) Fellowships are two-year professional assignments for individuals with advanced degrees in PECS-related areas. The fellowships aim to:

1) develop a cadre of future leaders with expertise in these areas;
2) provide technical assistance to organizations addressing security from an interdisciplinary perspective;
3) facilitate research, dialogue, and analysis of long-term security issues at the nexus of population and environmental change.

Providing Unique Interdisciplinary Expertise to Diplomatic, Security, and Development Organizations

The Population Fellows Program, administered by the University of Michigan's Center for Population Planning and funded by the U.S. Agency for International Development (USAID), has recently developed a new type of fellowship with support from the Woodrow Wilson Center's Environmental Change and Security Project. The Population, Environmental Change, and Security Fellowship combines the strengths of both programs in addressing critical aspects of evolving international security concerns. The fellowship draws on the Population Fellows Program's 15 years of experience arranging fellowships with organizations working on population and population-environment issues in the developing world. It also draws on the tremendous policy-level expertise of the Woodrow Wilson Center in the area of environmental change and international security.

The PECS Fellowship will provide a rich professional development opportunity for an early-career professional with graduate training and expertise in the linkages among population, environment, and security issues. The fellow will be placed for two years with an organization exploring these linkages through research, inter-institutional dialogue, case study preparation, and policy analysis.

Fellows as Innovators

Because the PECS Fellowship is a new initiative, we will work closely with diplomatic, security, and development organizations interested in hosting a fellow to formulate a scope of work that will challenge the fellow and have a meaningful impact on each organization's mission.

If past fellowships are any guide, we expect our PECS Fellows to serve as important catalysts for innovation within their organizations. Our traditional Population and Population-Environment Fellows have served a variety of organizations in this capacity – from local Ministries of Health and nongovernmental organizations to larger organizations such as CARE, Save the Children, USAID, the U.S. Department of State, World Wildlife Federation, The Nature Conservancy, United Nations Population Fund, the Centers for Disease Control, and the World Health Organization. These fellows have spearheaded such projects as institutionalizing reproductive health care for refugees and initiating community land-use planning processes to mitigate the environmental impact of rural migration.

Applying for a Fellowship

Candidates wishing to apply for a PECS Fellowship must meet the program's minimum qualifications:

- U.S. citizenship or permanent resident status; and
- a graduate degree in a relevant area, plus expertise in the linkages among population, environment, and security issues.

Furthermore, candidates must be early-career professionals (with no more than five years of post-master's experience); possess appropriate technical skills and knowledge; and show evidence of a commitment to a PECS-related career. To demonstrate this, candidates are asked to submit the following:

- an official program application form;
- a resume;
- a statement of purpose;
- academic transcripts;
- Graduate Record Examination scores;
- three letters of recommendation;
- a recent writing sample; and
- an official foreign language evaluation (optional).

If you are interested in applying for a PECS Fellowship, please contact Jane MacKie-Mason at the number on the following page. We will happy to review your credentials and discuss the application process with you.

(continued on following page)

environment in the field: inter-institutional partnerships, programmatic integration, and joint applied research. The salient features of these approaches are discussed below.

Inter-Institutional Partnerships: Due to the traditional disciplinary nature of organizations and the challenges posed by venturing into interdisciplinary areas like population and environment, many fellows have found inter-institutional partnerships a sound approach to linking population and environment at the intervention level. "Partnership" is viewed as a collaborative relationship formed between two distinct institutions or programs to provide multiple services or information to a specified target population. A clear example

Host Agency Responsibilities

Because fellows bring so much to the organizations they serve, we ask potential host agencies to consider carefully the type of experience they could provide for a fellow.

Are you an appropriate host organization?

We ask that potential host agencies be able to identify a meaningful PECS-related project a fellow could accomplish in our customary two-year placement period. Furthermore, because this is a development program for early-career professionals, the organization must be able to offer an experienced, committed mentor who will collaborate closely with the fellow and help advance his/her expertise.

Can you provide for some of the fellowship costs?

We attempt to be as cost-effective as possible in structuring our fellowships while providing sufficient support for fellows' professional and living expenses. In general, a fellowship provides the following:

- a modest professional stipend;
- health and emergency evacuation insurance;
- travel to and from the placement site;
- limited shipping expenses; and
- assistance with housing and cost-of-living adjustments, where applicable.

Through the years, the Population Fellows Program has arranged for various cost-allocation arrangements with host agencies. In some cases, the host agency has paid for a significant portion of a fellow's expenses; in others, the Fellows Program has provided the bulk of financial support. Most common is some form of cost-sharing in which the host organization provides several of the following:

- work-related travel expenses;
- housing and/or cost-of-living adjustments;
- necessary office equipment (computer, typewriter, etc.) and supplies; and
- access to support staff.

We should note that the more support provided by a prospective host organization, the more likely it is that a fellowship will receive program approval.

Requesting a Fellow

If you believe your organization could provide valuable experience for an early-career professional while better achieving your own organizational objectives, we encourage you to contact us. A phone conversation is often the best way to determine whether your organization is a good "fit" with our program. If it is, we will ask you to complete a Letter of Intent/Scope of Work formally requesting a fellow. This should include the following:

Contact information

How to reach your organization, whom to contact, and who will supervise the fellow (contact information and credentials).

Organizational information

What you do, where your projects are located, why you are requesting a fellow, and any other information that would help us identify an appropriate candidate for you.

Potential support

The level of support (financial, material, and/or staff support) your organization would be able to provide for a fellow as well as the cost of living in your area.

Scope of work

The 2- to 3-page scope of work identifies:

- the projects on which the fellow would work and the role s/he would play in them;
- the level of independent responsibility expected;
- the qualifications required (including languages);
- a flexible timeline for placing the fellow (fellowships can take several months to arrange).

Before preparing these documents, please contact us to discuss how we might structure a placement that will help your organization explore the critical links among population, environmental change, and security.

For more information, please contact: Jane MacKie-Mason • Associate Director
University of Michigan Population Fellows Programs
109 Observatory, SPH II • Ann Arbor, MI 48109-2029
Phone: 734-763-9456 • Fax: 734-647-0643
E-Mail: pop.fellows@umich.edu
Internet: http://www.sph.umich.edu/pfps/

For more information on population, environmental change and security issues, see the Woodrow Wilson Center's Environmental Change and Security Project's Web site at: http://ecsp.si.edu.

of such a relationship would be an environmental organization in a rural area coordinating with a family planning or health organization to provide local communities with access to general and reproductive health services. Partnerships allow institutions to develop integrated or comprehensive programs while minimizing the drain on technical and financial resources.

Programmatic Integration: Various fellows have experimented with more integrated approaches through which a single institution addresses both population and environment through a self-contained project. Within the context of the fellows' activities, integration primarily involves multiple and/or linked message articulation and service delivery. A looser form of integration which involves coordination and communication between two departments or programs housed under the same institution, could also be considered an internal partnership. Consequently, many of the issues discussed regarding partnering could also apply, to some extent, to integration. Interestingly, fellows have sometimes found internal integration more difficult to achieve than partnering, particularly when organizations have a rigid sectoral culture resulting from highly vertical programming.

Joint Applied Research: Joint applied research involves collecting and/or analyzing population and environmental data simultaneously to better assess their interactions. Data are gathered in areas such as community attitudes, beliefs, and values; migration patterns; land- and resource-use practices; health status; economic well-being; fertility levels; and environmental quality in order to develop a comprehensive portrait of target communities. Such information helps ensure that interventions are designed both to meet the felt needs of communities and to address objective threats to community and environmental well-being. Such research also helps inform ongoing interventions, ensuring that they are managed to account for changing community perceptions and that they are having the desired impact on the populations and environments they are designed to protect. Fellows have used research methodologies as diverse as analyzing census data, conducting participatory rural appraisal sessions, and examining interactions through the use of Geographic Information System (GIS).

Common Benefits

Many P-E linkage approaches share common advantages. The following is discussion of common benefits identified in three case studies of P-E Fellow placements. The three case studies examine Pathfinder in Brazil, The Nature Conservancy in Ecuador, and CARE in Uganda.[2]

Recognition of Community-Environment Interdependence: In the three case studies, fellows, host agencies, partner agencies and USAID Mission personnel unanimously agreed that a critical benefit, or perhaps justification, of linking social issues to the environment is the fact that the health of the environment, be it urban or rural, is intricately dependent upon the people using it, and vice-versa. Regardless of the isolation of a region, people reside in and sustain themselves on the land and its resources. The area of Earth which has not experienced at least minimal human exploitation is dwindling rapidly. Without acknowledging human presence in fragile ecosystems or crowded urban slums, environmental protection attempts will experience marginal success, at best. As a result, environmental organizations have come to recognize the importance of working with, rather than against, local residents and addressing their immediate needs so that they have the ability to focus on higher needs, such as resource conservation. Linked approaches play a crucial, facilitating role in this process.

Addressing Community Needs

Under traditional disciplinary programs, organizations enter a community with a set agenda to assist its residents in an area in which the institution possesses a high level of expertise. While this approach is logical, it is one that disregards the myriad urgencies present within the population. Through P-E partnering strategies, highly specialized institutions can meet broader community needs by coordinating with organizations possessing complementary expertise. Integration offers similar opportunities to address various needs, although it requires the implementing institution to have in-house technical expertise in multiple disciplines. The following are some of the benefits fellows have observed of interventions that address broader, rather than more narrow, development issues.

Legitimacy and Support: Whether an organization takes an integrated or a partnering approach to linking population and environment, it is likely to experience higher levels of goodwill within a community by addressing multiple needs. Communities are more inclined to perceive organizations carrying out environmental projects as responsible institutions committed to improving the residents' quality of life, in addition to preserving the local ecosystem. Likewise, population organizations can acquire legitimacy by meeting requests for assistance in resource-management methods. General development organizations that provide multiple services also enjoy the same benefits of achieving community confidence and trust.

Another factor unique to partnership strategies, which enhances support and legitimacy, is the role of the partners' reputations within their respective target regions. By partnering with a respected and well-received organization, the partner can capitalize on this respect, consequently having a grater chance of establishing support within the population.

Increased Participation: By directing project activities to satisfy community-identified needs, organizations may actually increase community acceptance of and participation in these activities. The local people will readily identify a tangible benefit they are accruing through the comprehensive nature of the project and consequently, will be more prone to participate actively in their activities. As discussed, active involvement at the local level is essential for ensuring sustainability of project interventions. In contrast to other methods, participatory approaches emphasize the importance of local actors and favor a transparent vision over a paternalistic one. In addition, by addressing multiple needs, institutions may also develop new constituencies for family planning, family health, and environmental conservation alike.

Increased Attention to Longer-Term Issues: Through satisfying

critical, immediate needs, organizations are able to alleviate some of the short-term concerns which prohibit populations from devoting time and resources to longer-term issues, such as resource conservation and protection. Quick and effective antidotes, such as health care provision, typically take precedence over interventions necessitating long-investments, such as sustainable agriculture and livestock management techniques. By addressing immediate concerns of a population, the local people, presumably, will have additional time and heightened interest to identify and address longer-term issues.

Increased Empowerment and Involvement of Marginalized Groups

Fellows, host agencies and development officials, in general, have come to recognize the importance of women and other marginalized groups (such as indigenous peoples) in issues relating to both health and the environment. With respect to women, they recognize that women exercise minimal power in the household and the marketplace, yet they are the primary decision-makers with respect to family health and nutrition. Moreover, they often play an important role in resource management. Consequently, they need to acquire the information and ability to influence others. Local people, likewise, represent an important target group, as they possess generations of knowledge regarding location-specific land management practices and herbal medicine uses. Interventions that involve close coordination with these groups are more likely to be culturally appropriate and, consequently, better received and sustained. The following are some ways in which fellows have worked to empower women and marginalized groups to assert their influence in positive ways within the population and environment arena.

Specialized Training: Providing the training necessary for members of marginalized groups to become agricultural extension agents or family planning or health promoters can engender a strong sense of empowerment. As community members take up positions of responsibility within their community and develop specialized skills and knowledge, their self-esteem rises and they are motivated to build their own capacity as well as that of their broader community.

Participatory Methods: Participatory development approaches can also be highly empowering for communities. Through research methodologies like PRA, communities can become engaged in the interaction of important issues like fertility, health status, and environmental well-being. As their awareness and knowledge are raised, these communities are empowered to participate in informed decision-making and can guide intervention design and implementation.

Engagement of All Groups: Finally, organizations have found that the way in which they implement their activities can be as important as the intervention itself in terms of empowering marginalized segments of a community. Meetings and activities can be designed deliberately to encourage participation from all sectors of society - making no distinction by gender or age group. In one project, trainers worked in mixed-gender pairs to set the example for target groups that men and women should work together and that each makes a vital contribution to any activity.

Broadening Perspectives

A comprehensive approach, at the very least, helps development specialists in all sectors understand and consider intervening factors that influence people's attitudes and behaviors. Through linked approaches, both office and field staff come into contact with people from various disciplines, offering them an opportunity to widen their thinking and to work in a mutually cooperative fashion to achieve institutional goals and objectives.

That institutional perspectives can be broadened by exposure to programs like the PEFP is clear in the case of The Nature Conservancy (TNC). TNC has traditionally adhered to a relatively strict approach to conservation. By hosting several Population-Environment Fellows, however, TNC has become much more committed to addressing a broader array of social issues when working on resource management. This recognition has filtered up through the organization, altering a variety of organizational policies and practices.

Fellows, host agencies, partners and USAID Mission staff interviewed for the purpose of evaluating the PEFP all concurred that organizations cannot address ecosystem pressures from a purely conservationist perspective.[3] They stressed that local populations play a pivotal role in conservation and to ignore them would be damaging to long-term conservation goals. This consensus was built, in part, through the consciousness-raising efforts of the PEFP and the early results of linked interventions facilitated by fellows.

Comprehensive Approaches Incorporate Attention to Areas Beyond Population-Environment

While addressing population-environment linkages may be an important facet of development work, fellows also have the opportunity to address several other areas as well, including income generation, gender inequities, and citizen participation. For example, in Ecuador, TNC Fellows designed projects to engage local communities more actively in resource management. In the process, they enriched individual and institutional capacity for problem identification and resolution. Such capacity-building activities contribute not only to health and environmental well-being but also lay the groundwork for a more informed and active civil society.

Testing the Assumptions of Linked Interventions

It should be noted that underlying all the approaches to and benefits of integration, is a fundamental assumption of Population-Environment work: that local peoples' quality of life can be improved while simultaneously reducing demand on natural resources. Restoring a sustainable balance between people and their environment is a compelling argument for linked interventions, however, fellows and host agencies have found that if intentions are not clear, this idea can be politically charged. If the linkages among population pressures, environmental degradation, and health and economic costs are not identified by communities themselves through participatory

research and consciousness-raising activities, Population-Environment interventions may raise concerns of "population control to promote animal and forest conservation." As a result, the PEFP remains committed to participatory work that explores the interconnectedness of humans and their environment, and is averse to prioritizing conservation over community needs.

Despite this sensitivity, it is important to recognize that linked activities can contribute meaningfully to declining demands on resources. Whether or not they are more effective and cost-efficient than sectoral approaches is being tested by the PEFP through an assessment project being conducted in select sites around the world. The results of these evaluations will go a long way toward justifying the program's continued commitment to intersectoral development work.

Focus on Michigan Fellows

Brief case studies of a few Michigan Fellows show the wide range of activities that fellows undertake, as well as the diversity of their professional skills and development. Fellowships highlighting work that includes population, environment, and security issues have been selected in an effort to focus on this relatively new area for the Population Fellows Programs.

Julia Cohen was a University of Michigan Population Fellow who was placed with the Bureau for Population, Refugees, and Migration at the U.S. Department of State. Julia became the government point person on the issue of refugee reproductive health and worked to incorporate this issue into projects funded by the bureau. Julia's key activities included the following:

- Working to secure funding for a mid-Africa refugee reproductive health initiative that included greater attention to gathering demographic and health data for refugee populations.
- Increasing awareness and support for provision of reproductive health services within refugee populations among a variety of U.S. and international organizations. These included the Centers for Disease Control, the United Nations, the World Bank, the Red Cross, Planned Parenthood, the Center for Development and Population Activities, USAID field staff, and non-governmental organizations (NGOs) providing services to refugees.
- Co-chairing the Reproductive Health for Refugees Working Group which met monthly to brief the State Department, USAID, the Department of Health and Human Services, as well as several NGOs working on issues related to this topic, of new developments in this area.
- Revising the Field Operations Guide of the Office of Foreign Disaster Assistance to incorporate women's specific health needs into disaster relief planning.

Lessons Learned

The main lesson learned during Julia's placement was that, historically, women's specific health needs have been overlooked by the planners and managers of refugee relief operations. Institutionalizing those services involves first raising awareness of the need for such services and then following through with research demonstrating the effectiveness of proposed changes. As a result of Julia's work the Program learned that:

- A single point person within a donor agency can profoundly influence the design and funding of projects in a new and emerging area of attention. Professional working relationships between individuals resulted in linkages that assured that previously unaddressed concerns were incorporated into future State Department projects.
- In crisis situations, women's needs are often overlooked and therefore require special attention on the part of program managers who serve migrants and refugees. For example, gender-based violence against women, particularly sexual violence, is a significant problem and until quite recently has been almost ignored by those charged with assuring refugees' safety and well-being. Policy changes to improve women's access to resources within refugee camps, special protection services for women at high risk for violence, and programs to serve women affected by sexual violence are all needed to ensure that refugee women receive the care and protection to which they are entitled.
- While data are still inadequate and more research is needed, some evidence exists to suggest that improving reproductive health services within refugee population may save lives and improve health status significantly: pregnancy complications may be diminished, high rates of transmission of sexually transmitted diseases (STDs) and AIDS among refugee populations can be ameliorated, and rates of sexual violence can be reduced.

Lorelei Goodyear was a Population Fellow placed with the International Rescue Committee (IRC) in New York. Her placement was similar to Julia's in that it focused on reproductive health issues among refugee populations, but it more directly involved her in the design and implementation of improved services for refugees. IRC is a non-sectarian relief agency that provides humanitarian aid to refugees and displaced persons throughout the world. Lorelei was involved in implementing a Mellon Foundation grant to institutionalize reproductive health services into worldwide refugee assistance. Her work primarily involved the following activities:

- Assessing refugees' needs in areas of contraception, AIDS prevention, STD treatment and services, emergency obstetric services, and sexual and gender-based violence protection.
- Training IRC headquarters and field staff on reproductive health issues among refugee populations and raising awareness of the importance of these issues.
- Developing and distributing "lessons learned" reports to help field staff learn from their colleagues working around the globe to improve services.

Lessons Learned

Lorelei's work helped improve the health status of refugees and displaced persons, especially of women, in diverse populations around the globe-from Pakistan and Tanzania to Azerbaijan and Cambodia. The key lessons learned during her placement include the following:

- Tremendous diversity exists in terms of refugee men and women's reproductive health needs around the globe. The importance of conducting an assessment of needs that incorporates attention to reproductive health issues, beginning within the first days of an emergency, is critical to assuring that adequate and appropriate services are provided.
- Currently, many reproductive health needs of refugees are not addressed at all. Assessments carried out in the field revealed a high incidence of sexual assaults, a need for family planning services among refugee women, a need for comprehensive STD prevention and treatment services—especially in areas where HIV and AIDS are endemic-and improved attention to emergency obstetric concerns for pregnant refugees.
- Sustainability of services mandates that both IRC medical staff and local providers receive training in reproductive health issues. Planning for the time when IRC staff will no longer be providing services, projects must incorporate training of local medical providers, as well as training of lay health persons—such as traditional birth attendants.
- Finally, political controversy may result when reproductive health issues are introduced into existing programs. Further research documenting the need for such programs, as well as their health—and life—saving benefits, is essential to ensuring their continued survival.

Alex de Sherbinin was placed with the World Conservation Union (IUCN) in Switzerland. As a Population-Environment Fellow he worked to establish linkages between population and environmental issues at the international policy-making level. During his placement Alex was involved with several key initiatives. These included:

- Managing a small grants program focused on linking population and environmental NGOs in the delivery of services.
- Coordinating a USAID-funded initiative on Water and Population Dynamics that included commissioning research focused on the relationships between population dynamics and access to fresh water resources.
- Promoting the development of linked interventions in conservation and reproductive health at IUCN field offices throughout the world.
- Institutionalizing Geographic Information Systems (GIS) mapping and analysis into the work conducted at IUCN. This new technology is helping the organization visualize the connections between demographic variables and conservation activities.

Lessons Learned

Integrating population issues into an environmental organization takes time and adjustment, but the results may include a profound shift towards more effective interventions. Lessons learned as a result, in part, of Alex's work include the following:

- Scarce water resources are emerging as a significant threat to human health and well-being as growing populations, rising consumption levels, and inequities among countries affect the availability of this precious resource. Despite this, however, the complex and multi-faceted links between human health, demographic factors, ecosystem stability, and water resources are often not made by policy makers-who may simply place forests and grasslands on the list of potential "users" of water, rather than viewing them as necessary "providers" as well.
- Attention to the linkages between population and environment assumes new importance under conservation organizations' shift toward bioregional —or ecoregional—conservation. Conservation organizations increasingly hope to slow the rate of habitat loss by focusing on ecosystem-based management-a process that necessarily must incorporate human variables, such as population growth and migration, population density and distribution, and resource use. This new approach demands that conservationists and population experts share information and knowledge about the areas in which they are working. Greater attention to the potential uses of GIS programs in facilitating analysis of multiple variables is also needed.
- Incorporating demographic analysis into protected areas management is a strategy that leads to more effective policy development, particularly in the case of policies that respond to migration flows in and around protected areas.
- Integrated conservation and development projects, whereby conservation organizations partner with reproductive health or family planning organizations, have proven to be a successful strategy in many places for providing needed health services to remote and hard-to-reach populations. Such partnerships allow conservation organizations to more effectively address the needs of populations living in and around protected areas. Key to the success of these partnerships' work is a 'gender-approach' to conservation and development that recognizes women as key players in household decisions about resource use, reproduction, and management of the environment.
- Finally, increased attention to the links among population, environment, and security issues is

necessary for all organizations working internationally. Environmentally displaced persons are a concern for those interested in protecting resources, as well as those interested in assuring the security of the state.

Conclusion

University of Michigan Population Fellows work in a variety of settings and perform a range of tasks. All Fellows, however, gain the opportunity to develop a network of professional contacts, the chance to master new skills in the field of international development, and the opportunity to transfer important perspectives and competencies to the organizations with which they work. Perhaps most importantly, the Fellows Program has helped to raise consciousness within organizations and local communities about the relationship of population to other aspects of development.

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[1] For more on the particulars of the three case studies, see Stem, 24-66.

[2] Stem, 76.

Official Statements

Below are excerpts from recent official statements in which environment and population issues are prominently cited in the context of security and national interests. The Wilson Center encourages readers to inform the ECSP Report *of other related public statements.*

Statements by William J. Clinton
President of the United States

Excerpts from President Clinton's Remarks at an address to students at Moscow State University of International Relations, Moscow, Russia
1 September 1998

Together, we can create cleaner technologies to grow our economies without destroying the world's environment and imperiling future generations. Together, we can harness the genius of our citizens not for making weapons, but for building better communications, curing disease, combating hunger, exploring the heavens. Together, we can reconcile societies of different people with different religions and races and viewpoints, and stand against the wars of ethnic, religious, and racial hatred that have dominated recent history.

Excerpts from President Clinton's State of the Union Address, Washington, DC
19 January 1999

…. [We] must ensure that ordinary citizens in all countries actually benefit from trade—a trade that … protects the environment.

…. A century ago, President Theodore Roosevelt defined our "great, central task" as "leaving this land even a better land for our descendants than it is for us." Today, we're restoring the Florida Everglades, saving Yellowstone, preserving the red rock canyons of Utah, protecting California's redwoods, and our precious coasts. But our most fateful new challenge is the threat of global warming. 1998 was the warmest year ever recorded. Last year's heat waves, floods and storms are but a hint of what future generations may endure if we do not act now.

… I propose a new clean air fund to help communities reduce greenhouse and other pollution, and tax incentives and investments to spur clean energy technology. And I want to work with members of Congress in both parties to reward companies that take early, voluntary action to reduce greenhouse gases.

All our communities face a preservation challenge, as they grow and green space shrinks. Seven thousand acres of farmland and open space are lost every day. In response, I propose two major initiatives: First, a US $1 billion Livability Agenda to help communities save open space, ease traffic congestion, and grow in ways that enhance every citizen's quality of life. And second, a $1 billion Lands Legacy Initiative to preserve places of natural beauty all across America—from the most remote wilderness to the nearest city park.

Excerpts from President Clinton's remarks at the Democratic National Convention Dinner, Washington, DC
23 March 1999

….We'll have an environmental policy that will clean up the environment, but will emphasize, insofar as humanly possible, market mechanisms and incentives, and technology and creativity to clean the environment up, so that we don't overly burden the economic machine when we're doing it.

And, to be fair, a lot of these things are possible today, and they might not have been possible in former years. For example, it is now literally possible—as a lot of our most innovative utilities have proven—to generate more energy capacity through conservation, through alternative sources of energy, through partnering with your customers, than ever before.

It is also now possible to grow an economy without increasing the use of fuel that burns greenhouse gases. But most people

don't believe it still, even in America, and certainly not in a lot of developing countries.

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Statements by Albert Gore, Jr.
Vice President of the United States

Excerpts from Vice President Gore's remarks at the World Economic Forum, Davos
29 January 1999

…But in the midst of new wealth and opportunity, we have also found new risk and challenge: the growing dangers of the proliferation of weapons of mass destruction; the slowing—and in some cases, the reversing—of reforms in important countries upon whose continued stability and progress the world depends; the breakdown of social order and consequent human suffering in too many struggling, developing societies; the devastation of millions—especially in Africa, by HIV/AIDS; the adding of another China's worth of people to the world's population every decade—95 percent of them in the world's poorest countries; the changes we are causing in the global environment, which threaten to disrupt the relatively stable climatic balance we have known since before the agricultural revolution.

…For our part, the United States is following a growth policy based on three elements never before tried in combination: eliminate the deficit, open markets, and invest in our own people. We replaced the vicious cycle with a virtuous cycle—lower interest rates, more investment, more jobs, more growth—which fuels even greater investment in our future.

…We must never lose sight of the poorest nations. We would like to see, this year, on the brink of a new millennium, decisive progress toward debt relief for the world's poorest and most indebted countries. Debt relief means removal of the overhang—that is, the burden that debts place on investment—and it means more resources for environmental protection and child survival.

…These goals—a strong economy, a clean environment, peace and security—do go hand in hand. As we move beyond the age of bipolar tensions and sharp ideological conflicts—as we deepen and extend our economic and security ties—nations are finding the wisdom that grows from our connectedness.

…There is no greater challenge for our global community than to break the vicious cycle of poverty and ignorance—and create a virtuous cycle of smaller, healthier, better-educated families—with lower child mortality, and higher incomes. In this way, we can seek a new practical idealism—grounded in self-interest, but uplifted by what is right. We have it in our power to build a world that is not just better off, but better.

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Statements by Madeleine K. Albright
U.S. Secretary of State

Excerpts from Secretary of State Albright's remarks on Earth Day 1998 at the National Museum of Natural History, Washington, DC
21 April 1998

…The threats we face from environmental harm are not as spectacular as those of a terrorist's bomb or missile. But we know that the health of our families will be affected by the health of the global environment. The prosperity of our families will be affected by whether other nations develop in sustainable ways. The safety of our families will be affected by whether we cut back on the use of toxic chemicals. And the security of our nation will be affected by whether we are able to prevent conflicts from arising over scarce resources.

There is much that we can do through our diplomacy to achieve these goals. Currently, to cite just three examples, we are promoting efficient management of the Nile River Basin; supporting better forestry practices in Southeast Asia; and striving to negotiate a worldwide ban on the release of pollutants such as DDT and PCBs. But if we are to move ahead as rapidly as we would like, we will also need support from our friends in Congress.

For example, we need to gain approval of the President's request for funds for USAID so that we can help other countries grow in ways that balance economic progress, social development and environmental concerns. We need support for the Global Environment Facility (GEF), which embodies the partnerships for sustainable development that was forged in Rio. This partnership is not helped by the fact that, in each of the last three years, we have fallen short of our pledged share to the GEF. We need to do better than that. We need to meet our commitments, in full, this year and every year.

As the President stressed during his recent trip to Africa, we are asking the Senate to approve the Convention Against Desertification. We are also asking the Senate to approve the Biodiversity Convention, for we cannot ensure our future if we endanger the biological base that serves the needs of every human society, no matter how rich or poor.

…A major contributor to the stress we place on the global environment is the growth in the world's population. At current rates, we are increasing by an amount equal to the population of Mexico each year. And more than 90 percent of this increase is in the developing world. As I have seen in visits to South Asia, Africa, Latin America and Haiti, rapidly rising populations make it harder for societies to cope. Even when economies grow, living standards do not rise. Even when there is planning, resources of land and water are depleted. Even when overall production of food goes up, more people go hungry.

The Clinton Administration favors a comprehensive approach that takes into account the environment, development and the rights and needs of women. This accords with the consensus created at the 1994 Cairo Conference, and it is reflected in our Child Survival and Disease Programs, and in our support for international family planning.

As is well known, there are those who would like to impose crippling conditions on our assistance to family planning. On this issue there are strong feelings on all sides. I know because my own feelings are strong, and I believe international family planning needs and deserves our support. The programs we help are voluntary. They improve people's health; they save people's lives; they reduce significantly the number of abortions; and they contribute to a more livable world.

Excerpts from Secretary of State Albright's address to the Australasia Centre of the Asia Society, Sydney, Australia
30 July 1998

Leading scientists agree that greenhouse gases are warming our planet. A warming planet is a changing planet, and not for the better. Unless we act, sea levels will continue to rise throughout the next century, swamping some areas and putting millions of people at greater risk to coastal storms. We can expect significant and sudden changes in agricultural production and forest ecosystems, leading to changing patterns of wildlife migration and forcing more people to leave home and cross borders in search of productive land. We will also see more heat-related deaths, more serious air pollution, increased allergic disorders and more widespread malaria, cholera and other infectious diseases.

…I note that the scientific backing behind the current warming projections is the Intergovernmental Panel on Climate Change, representing the work of more than 2,000 scientists from more than 50 countries. Their report is carefully worded, factually based and it recognizes the uncertainties as well as the risks. Yet in both our nations, we have those who insist that the scientific warnings are wrong; or that, even if they are right, we can't afford to take the steps required to slow the release of greenhouse gases. But the one thing we truly cannot afford to do is wait and see. For if the warnings are right, the cost of reversing climate change and cleaning up the damage will be infinitely greater than the cost of preventing it.

Our choice is clear. We can keep pumping more gases into the atmosphere every year, invite more severe climate change, and let future generations deal with the consequences. Or we can act prudently to protect our planet, our children's home…I have to say having just recently traveled with President Clinton to China, where it is clear that while the United States is the greatest problem now, they will be the greatest problem. A message that he is delivering is one that I think is key: countries that are so-called developing countries are concerned about how putting in environmentally sound technology will affect their development. And the President argues that no one has the right to tell another country to limit its development. But that those of us that have gone through industrialization can validate the fact that often the economic situation in a country can be actually improved once environmentally sound technology is put in.

I believe ultimately, and I am confident that we can make our environment healthier and keep our economies competitive or even post economic gains through greater efficiency and the use of clean technology.

Our cooperation is also essential to solve the other half of the climate change puzzle, which is to create a global action plan to which both developed and developing nations contribute. This is critical if we want to make not just short-term headlines, but long-term improvements. For it is expected that, within two decades, the largest emitter of greenhouse gases will not be the United States, but China. And that, by ten years after that, the developing world will have become the source of the majority of such emissions.

Industrialized nations created the global warming problem and must take the lead in responding. But clearly, no solution will work unless developing countries play a part in it.

Global warming may look like an insurmountable problem, and its potential economic effects can seem too large to confront. But in contemplating the challenge, we should recall the many times when naysayers predicted that protecting the environment would be too hard, too costly, and too cumbersome. From America's waterways cleanup in the 1970s, to Australia's stewardship of the Great Barrier Reef, to the global effort to close the ozone hole, environmental preservation is working, and it is working in ways that keep our economies growing.

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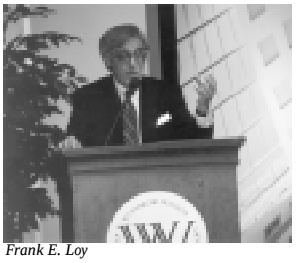
Statements by Frank E. Loy
U.S. Under Secretary of State for Global Affairs

Excerpts from Under Secretary Loy's remarks entitled "Environmental Diplomacy in the 21st Century," Woodrow Wilson Center, Washington, DC
8 March 1999

It seems to me when you look at today's world, what strikes you when you try to make environmental progress is that we have a number of issues that are not at all resolved, and some of them are not in very good shape. The first one is the problem of treaties. How do you make progress in a multilateral world when you have a hard time getting treaties negotiated, and then when you have a hard time getting them ratified? The second issue I want to talk about is the new role of science, and the problem of thinking about science in a policy fashion, and getting agreement on science, and getting people to sign on to scientific conclusions. The third problem I want to talk about is what I would call the residue of the North-South problem. That is, the tendency in discussions that we have with developing countries for an emergence of a conversational tone which reminds you, really, of the 60s and 70s in some way. It reminds you of attitudes which sometimes are gone when you talk to developing countries, but often are present when you talk to them about environmental issues. At least I have had that experience. The next item I want to talk about is alliances, and some examples of how we would have not done well without alliances. And last I want to talk about the G-word, globalization, and what it really tells us about environmental progress.

I want to illustrate some of these problems and their application by talking about some specific treaties that we are working on in one way or another. On the issue of treaties, we have had a very hard time getting environmental treaties approved; to be precise, to get the advice and consent of the Senate of the United States to some treaties, some of which, by common consent, are not even controversial. We have before the Senate now the Law of the Sea Convention, Convention on Biological Diversity, a number of conventions regarding fish, and several others. The only one recently we have had actually ratified is an agreement on straddling fish stocks. We have had a very hard time getting the Senate to take up and agree to treaties.

The arguments against environmental treaty ratification are threefold. The first argument is that in some way, the treaty gives up some degree of sovereignty. The second argument is that the treaty will involve a substantial new bureaucracy, which is true sometimes and not true others. And third, it will cost money. And in the discussions I have had, I have agreed frequently that all three of those may be the case. They are not always the case, but they are frequently the case. The money is not usually very big, but I have had a very hard time getting anyone to discuss these in terms of a cost-benefit analysis. Is the benefit we get [from the treaties] worth these three costs?


Frank E. Loy

It is striking that in none of the agreements that I have just listed that are before the Senate, for example, have we been successful. The Law of the Sea Convention, which was rejected some time back, in the Reagan Administration, because of certain provisions regarding mining and exploitation of the bottom of the international sea, has been corrected. Almost everybody agrees that the present provision deals with the objections that were set forth at that time. But nevertheless, we have not been able to get that past the Senate. We have even pulled out the big guns at Department of Defense (DoD). The DoD has made it clear that it would benefit from the Law of the Sea Convention, and because it has rights of transit enshrined in it. But we have been unable to get that done.

It requires some thinking as to whether [these difficulties in passing treaties] are going to change. What alternative methods of international lawmaking can one come up with that would in some measure have a similar effect? One can have various [strategies] such as "act and review," for example, where nations act and then there is sort of a peer review. The next person will not act unless that review shows that the first act is really meaningful. You try to step up a ladder in this fashion, by reciprocal steps, and then look back to see what the other guy is doing. That works pretty well in bilateral agreements. We have had de facto agreements, in some cases, in the arms control area, where there was no binding agreement, but where there were these reciprocal steps. It is a little harder to do when you have 150 countries, and in fact it may not be possible. There are other techniques one can talk about. This is an area where I think the world of scholarship and the world of policy can actually collaborate rather usefully, because that is an area where we need intellectual input.

The second thing I listed was the role of science. The Department of State has been criticized very sharply by the science community for not being science literate, for not taking science seriously, for not knowing what to do with scientific information when it gets it, and for not having a senior scientist on its staff. Otherwise, they are happy with us. I might say that on the 15th of April I am talking to the AAAS [American Association for the Advancement of Science] and I hope to unveil the answer to these charges and talk about what should be the role of science in the department. That is not really my point today. My point is how do you undergird agreements that you make with a scientific data and scientific understanding and scientific analysis that will be credible?

We recently had a negotiation, a very tough negotiation in Cartagena, Colombia, that involved the trade in genetically modified organisms (genetically modified agricultural products). And the negotiation cratered; it did not succeed. And it did not succeed, in large part, because I think there were serious differences, gut differences, between different countries, particularly the European countries and the United States (and the United States was joined in this case by five other countries: Argentina, Canada, Australia, Chile, Uruguay). [Differences persisted] on the question as to whether genetically modified agricultural products were potentially harmful to human health. And I am not sure that in this particular case, if science—better science—would have answered the question or would have resolved the dispute.... So there were other cases in other parts of Europe, including the beef hormone case, where science may not be the answer to that problem. But nevertheless, we have the problem of demonstrating scientifically some very complex things, more complex than they used to be; the most complex, perhaps, being the issue of climate change.

I think we have to analyze, how do we go about finding the best way to present good science? I think in climate change we did it right, we have something called the Intergovernmental Panel on Climate Change which is maybe the world's largest peer review group. It is quite respectable, and it has had enormous consequences, in the sense that in many respects, the science dispute is settled. On the other hand, even in that case, and certainly in every other case, we have what you might call rogue scientists. I am not describing their character necessarily; I am suggesting they are outlyers from the mainstream of scientific opinion. They get a lot of airtime in our society, especially when journalists try to balance views to establish the proposition that they are being fair. They do that by presenting both the mainstream view that may be agreed to by 2,000 scientists, and the view of a scientist from upstate Maryland. And the problem for the journalist of how to present that, and the problem for us how to think about that, and the problem of the confusion that is created by that, is something we have not resolved. So I would say the issue of how to structure scientific inquiry that is not only scientifically sound, but is a sound way of presenting science to publics that have to make decisions about things, is very difficult. And the problem of

the rogue scientists is a subsidiary problem of that.

The third problem I mentioned that we deal with in today's world is the north-south problem. And it is not new, but I meet it in ways that I have not been able to break through. Admittedly, I have only been at it for four months, but I have tried. The problem is totally understandable, but it is one that is very difficult to deal with, and that is the feeling that the environmental agenda is not the agenda of the developing country. "The environmental agenda is your agenda, and if I go along with it as a developing country, I am going along with you, because you want it." And then you talk about what is important, and what are the consequences of not going along, and what are the benefits. You can do that and sometimes you get through, but frequently the filter through which that information has passed, which is that "it is your agenda and you want me to do you a favor."

And again, let us go back to climate change. It is most notable in climate change. As you may or may not know, the concept that we have and that is mandated by the Congress of the United States on a resolution that they passed, and which I think in principle is a sound resolution, is that we ought not to try to make an agreement on climate change that is not global in reach, to which the developing countries do not sign up in some fashion. And I think that makes sense: if you have a global problem, it would be nice to have a global solution. On the other hand, when you try to talk to developing countries, you get this reaction that I described, or various versions of that. As a result we have, as of today, exactly two developing countries that have agreed in principle to make commitments of the kind we are looking for. One of them is Argentina, the other is Kazakhstan. And we do not have a lot of people in the pipeline. That tells you something. That tells you it is not viewed by developing countries as their agenda. You say "look, we have the consequences of climate change, which we're talking about." And you go into that in some detail. "We are not going to be the only loser, we are all going to be losers, that includes you, and in fact we are not going to be the worst loser, because we can probably adapt a little better than you can!" And so far that has not been persuasive. And I think it has not been persuasive because of an attitude, which is the north-south attitude. This says (and again there is truth to this, but it leads you in different directions), "look, you guys got rich burning fossil fuels, and you are burning most of them right now." So you are going to this little emitter (we talk about emitters) and you are saying "you help fix it" and that is crazy! "It is your problem, you fix it and after you fix it I will talk to you." You get various versions of that and it is understandable, but it is also reasonably frustrating. And my sense is, we are trying to make modern environmental policy in an era which still has a very substantial north-south mentality, whether it is applicable to the case or not.

The fourth thing I mentioned I want to talk about is alliances. The United States right now is probably as powerful a country as we have had, in relative terms to others. Certainly you can talk about the British Empire at its height, and before that you probably have to go to the Roman Empire. I mean, we are the sole superpower and everybody knows it. And in fact that causes part of the problem. We have to be very careful about how to exercise that power because we are constantly being accused, in every negotiation, in every context, with the sin of hegemony, and with throwing our weight around. So there is no way to avoid that, I think. That comes with the status that we have, and the only way to deal with that is to form alliances. And we have done that, I think, assiduously, and intellectually honestly, and well. But it is striking how important that is even though, in theory, you have all this power. In the case of the agreement on the trade in genetically modified agricultural products, we would have been out of luck if we had not put together a very strong alliance group. And we had to make adjustments and we had to give and take in order to keep that group together. It was absolutely worthwhile and it was absolutely the right thing to do, but however strong we are, we needed Uruguay. We needed Uruguay and we needed Chile because we could not handle the texture of the negotiation on our own, in part because of this charge of hegemony. So I simply stress that to some extent the stronger you are, at the moment, it strikes me, the more you need these alliances.

The last thing I would simply say, is the issue of globalization, another place where I think we need some intellectual work. To me, globalization means the increased exchange in trade and goods and in capital among nations. [It means] the movement, even of people, but particularly of trade and capital, in a way that puts people, working people and businesses in the United States, in competition with those in Malaysia, in a way that was not true a long time ago. And the consequences of that, we are still in a sense sorting out. But the fact that that is a phenomenon that is dominant in today's economy very much impacts our environmental diplomacy of the 21st century. The fear of the environmental community, of course, always is that this will lead to a reduction in environmental standards: the famous race to the bottom. If an American manufacturer has a ten percent cost for a smokestack chemical precipitator, or some other environmental device or environmental process, which the competitor in a developing country or some other country does not have, the fear is one of two things: either that the manufacturer will move his operations to that other country; or more likely, that he will not do that, but he will go to the government of the United States and say "look at that guy over there, he does not have that ten percent cost that I do, that is an intolerable competitive situation. You have to reduce your environmental standards in order to make us on an even keel." That is the fear. One of the questions, and this where I think some additional work could usefully be done, is to what extent that is true. The German Marshall Fund a long time ago did some interesting work on whether companies choose sites on the basis of the environmental laws and their strictness or their non-strictness. They found mostly that was less true than more true. That is a somewhat rough description of a very elaborate study. But I think the question is to what extent that fear is true today.

But the second question is, which is the more true of the two competing scenarios? One scenario, feared by some, says more trade equals more wealth equals more consumption equals more environmental degradation. And the other competing

claim says more wealth means more countries with more middle class, more disposable income, more ability to choose how to spend dollars, and more ability and willingness to deal with environmental issues. Poor countries cannot do it, they do not have that luxury, they do not have the resources. Therefore wealth means better environment. I am putting these in the crudest sense, but that debate is absolutely unresolved in the American environmental community today. And it hurts us in several ways.

Next week I am going to be in Geneva, at a high-level symposium of trade people and environment people. It was proposed by the President in his speech last year. And the idea is to see whether we can make this trade body environmentally more responsible. At least half of the American environmental community did not really want to do that, I think, because they think this trade body is fatally flawed. And fixing it up is not the answer. Curbing it is the answer, or building a parallel and competitive environmental organization may be the answer, but that is a hopeless organization if you believe some people. We are working on the opposite assumption: that it is an organization that can, over time, successfully take account of environmental considerations. We will have to see. But the issue of how to deal with this phenomenon, and whether the phenomenon helps or hurts the environment, the phenomenon of globalization, is an element in today's environmental negotiation that simply did not exist twenty years ago. If it existed, people did not think of it in those terms and they did not accord it those values.

I think of those five issues, five phenomena if you will, shaping environmental diplomacy in this century and the next. And none of them are by any means intellectually resolved, and they certainly are not resolved in terms of negotiations. And they come up again and again in almost every discussion we have and every dispute we have. Let me just say a couple specific words about the climate change negotiation, because it is, in a sense, the "biggie." We certainly spend more effort on that and I see people in the audience who spend equally much time on that, and are equally or more knowledgeable about that [issue].

We have two big problems. The one I alluded to already: we have a global problem, and we do not have a global agreement. We have an agreement, the Kyoto Agreement, which only consists of the developed world. That is understandable in the sense that in a decision made some time back. The developed world sort of gave the developing world a bye, and said "we will go first." This is called the Berlin Mandate. I think it was a decision that is now technically no longer in force because it was overtaken by Kyoto, but it is in force in people's heads. But it will not work that way, I think. It will not work that way because very soon the developed world will not be the biggest emitter of greenhouse gases that cause the global climate change. If you look at the curves of the two, you will find that agreement among the developed world is simply not going to cut it. It is not going to make a big enough difference. So, for that reason, an agreement among the Kyoto parties alone is not going to work. And secondly, politically, as I alluded to earlier, the Senate of the United States has made it very clear that it is not going to ratify an agreement that is not in some way global in reach. So there are two reasons why [developing country participation] is necessary. I just came from two days in Mexico last week (a self-defined developing country, according to them), and we made some progress. But as I left I had my pen out and they did not choose to grab it and sign anything. So we will have to wait.

The other problem is cost. There is no question that there is a cost to taking the measures that are necessary in order to reduce greenhouse gases. Now, our argument is there is not a net cost, in the sense that the cost of the damage done by climate change is substantially greater than the cost of trying to curb climate change. But there is a cost. How much that cost is, is a matter of substantial debate. And two things about that cost need further work. One of them is, what is the difference between the cost of reducing greenhouse gases if you do it all in your home territory, and if you do some in your home territory and for the other you use the trading mechanisms that are built into the Kyoto Agreement? It sounds like a terribly arcane subject matter, but it is not arcane, and the reason it is not is because we know that the cost difference is huge. And it seems to me quite improbable that we can actually agree to an agreement that does not give us a method of complying with it that is the lowest-cost method we can devise. That seems to me so sensible that I am constantly surprised when I go to Europe, and I meet people that say "Ah! No, we have got to limit the extent to which you can use these mechanisms, these trading mechanisms, that would reduce cost." And when I say, "Why?" Well, the answers are various. Some of them are honest and some of them are maybe otherwise. Part of it, in my opinion, is kind of what I call the "Lutheran" view of Europe, which is that "you guys (Americans) are living a profligate life. You are using too much energy, energy's too cheap, you are not saving it, you are buying big cars, you are not turning off the lights, et cetera, and we are going to punish you." That is a big part of it. Nobody will say that, but I am convinced that is one thing. And another one is, some people suspect there is a kind of a competitive concern here that is, "if we make it expensive for the United States, we (the Europeans) will be ahead." I do not think that is the biggest part of the deal. I think part of it is, the NGO community in Europe again is outraged at our energy prices, and believes that in some way or other we are just trying to get rid of the problem without really paying any costs. That is a hard problem at the moment to fix. I think in some way we will get over that, but I mention it only to indicate the kinds of problems we are having in applying both science and diplomacy to the task of developing a truly global agreement on climate change.

One word more on an agreement that is done and that is a relatively good agreement, although it is by a factor of fifty easier than climate change: the Montreal Protocol on ozone-depleting chemicals. The reason that agreement, I think, worked, is because there was relatively modest cost, and relatively few emitting countries, and there was a technological substitute for the offending agents. What is good about the agreement, though, is that it managed to deal with the north-south issue rather well. It ended up giving different timetables, different

requirements for the south, and a pot of money, which is not all there yet, but a pot of money to help them adjust to the problems that would come as they changed from one agent to another. The most remarkable thing about the Montreal Protocol, is it goes back to the science issue. This is an agreement that was adopted to ward off a threat at a time when not a single person could show any damage from the phenomenon that we were trying to guard against. There was no death, there was no injury, there was no skin cancer, there was nothing. It was all in the future, and it was all based on scientific projections, which in fact have turned out to be accurate. That gives me a lot of hope, because it seems to me that if we can do that there, even though that was a so much simpler agreement than some others, it may be that we can apply science sensibly and effectively in other agreements.

This is not an elegantly formed talk. It is intended to throw out some ideas and to give you some sense of what I consider to be the interesting milieu in which we are trying to do environmental diplomacy at the turn of the century. Some of the problems that we have, some of the agreements that we are working on, and some of the solutions we are trying to find. And in all of that, I welcome the help of the Woodrow Wilson Center, and any other scholars who want to contribute to our solution of some of these problems, and to the negotiation of some of these agreements.

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Statements by Melinda L. Kimble
U.S. Acting Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs

Excerpts from Acting Assistant Secretary Kimble's remarks at the Sixth Session of the United Nations Commission on Sustainable Development
29 April 1998

…[F]reshwater is as essential to sustainable development as it is to life. Water has economic, social and environmental values that are inextricable, mutually supportive and intimately linked to other international discussions taking place. Water is, however, primarily a local and national issue, and actions and solutions need to be generated, supported and implemented primarily on local and national levels.

All governments need to redouble efforts to address water issues. This is as true for the United States as it is for other countries. In February, President Clinton and Vice President Gore announced a new Clean Water Action Plan (http://www.epa.gov/cleanwater/action/toc.html) budgeted at more than half a billion dollars in our next fiscal year to restore and protect the waters of our country.

The plan deals with the real issues of sustainable development. Agriculture is one important example. We need to ensure food security, but at the same time, this sector—which uses 70 to 80 percent of all water resources—must become more efficient in its use and ways must be found to reduce its impact on water quality and quantity. In the United States, we support education and action plans that increase awareness and we support the successful the implementation of programs to protect wetlands and watersheds, to control erosion, and to reduce non-point farm pollution. Wetlands are another, even more specific, aspect of water in which we regulate the conversion of wetlands to farmland and offer incentives to farmers to conserve wetlands and even to restore them.

The United States is making a concerted effort to share the experience it has in water management—including lessons it has learned, and the expertise it has developed—in support of sustainable development around the globe. In our bilateral development assistance program administered by the United States Agency for International Development we provide approximately US $330 million dollars per year in freshwater related activities.

In Central and South America, the Caribbean, Africa and Southeast Asia we actively support integrated watershed management efforts. In Eastern Europe and Southeast Asia, we are helping governments reduce industrial and agricultural pollution. Other efforts are focused on helping governments to establish regulatory frameworks to protect water resources.

An essential part of the United States' efforts to support sustainable development of water resources is focused on effective local participation in decision-making about water resources and their sustainable development.

In Asia we are supporting farmer management of irrigation districts. In Africa, the Middle East and Latin America, we are supporting local decision-making in the development of drinking water supplies and sewage treatment. These efforts include a special focus to include women at all stages from decision making to implementation and management, to collecting and providing gender-disaggregated data.

The report from this meeting shall stress ways in which governments and the international community can take practical steps, using a watershed and river basin approach, to integrate the sectors using water.

Reflecting our national experience and the lessons we have learned in our development assistance programs we have tried to emphasize the following points in these meetings.

- That an integrated approach to water management is necessary to sustainable development.
- That education—formal and informal—is crucial to implementing watershed management and planning.
- That population changes and demographic trends must be factored into watershed planning and management.
- That local involvement in decision making is essential, including in particular the active involvement of women.
- That use of ecosystem approach to encourages integrated land and water management is necessary to watershed management is useful in integrating land and water

management.

The purpose…is to generate dialogue between governments, business and industry representatives, trade unions, NGOs and other major groups on the role and responsibilities of industry, which, if exercised wisely, will lead to higher living standards, increased social development and enhanced quality of the environment.

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Statements by Julia V. Taft
U.S. Assistant Secretary of State for Population, Refugees, and Migration

Excerpts from Assistant Secretary Taft's remarks to participants in the International Diploma in Humanitarian Assistance Center for International Health and Cooperation and City University of New York, Hunter College, New York, NY
6 July 1998

…Because you're working in the international humanitarian field, it may be useful to understand U.S. policy on international family planning, an issue that has become unfortunately politicized. U.S. population policy is a critical element in our comprehensive strategy for sustainable development. Sustainable development integrates goals for population and health with those of protecting the environment, building democracy, and encouraging broad-based economic growth—again, linking us back to several of the national interests of the Department.

World population is expected to reach 6 billion within the next year with most of the current annual increase of 81 million people occurring in the developing world. More than 120 million couples around the world want, but do not have access to, quality voluntary family planning services, and even more are without related reproductive health services. Our goal is to help couples and individuals to determine freely and responsibly the number and spacing of their children and to address related reproductive health needs.

I should note here that no U.S. government funds are spent to perform or lobby for abortion as a method of family planning. In fact, there is extensive evidence that family planning plays a key role in reducing unintended pregnancies and preventing abortion. This evidence is unfortunately often ignored in the perpetual political debates on population issues.

Refugee women, in particular, often lack even the most basic elements of reproductive health care, yet, by the very nature of their refugee status, are at even greater risk of sexual violence, STDs [sexually transmitted diseases] and HIV/AIDS, and pregnancy complications. Our policies, and the programs of my Bureau, in particular, recognize that these women need appropriate health care and greater protection from sexual and gender-based violence. We support the programs of international organizations and NGOs [nongovernmental organizations] seeking to achieve these goals….

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Statements by William S. Cohen
U.S. Secretary of Defense

Excerpts from Secretary of Defense Cohen's remarks to the Coalition to Advance Sustainable Technology (CAST), Denver, CO
26 June 1998

… We recognize that we have got to find ways to conduct our business and yet do less damage to the environment. So we're looking at alternative fuels as far as our systems are concerned. Sherri [Goodman, Deputy Under Secretary of Defense for Environmental Security] has been instrumental in this. We tasked our military to go out and find creative ways to engage in the activities we have to engage in, but to find ways to save energy, to find ways in which we can reduce pollution. We give awards out once a year and she organizes this and does an outstanding job for the awards that we give to all of the services who actually compete, go out and say, "Here's how we can save energy, here's how we can reduce pollution, here's how we can take advantage of working with business to come up with an innovative idea." That goes on every day of the year.

Teddy Roosevelt…was also a great environmentalist. He said, "You can't ride roughshod over the land. If you skin and exhaust the land you will undermine the days of our children. Our natural resources are the final basis of national power and perpetuity." We believe that. So what we want to do is to continue to make sure that we don't ride roughshod and skin the land and work together to find constructive solutions on how we can measure up to our responsibilities.

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Statements by Sherri W. Goodman
U.S. Deputy Under Secretary of Defense for Environmental Security

Excerpts from Deputy Under Secretary Goodman's prepared remarks, to the Oklahoma Association for Environmental Education, Fort Sill, OK
13 February 1998

…[T]he focus of our efforts are on protecting people, equipment, facilities, and natural and cultural resources, all of which are necessary to conduct the defense mission, and maintain the readiness of our troops.

This responsibility involves managing the natural areas under our stewardship, 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 people, and complying with the law. To accomplish this, environmental factors are now integrated into all defense activities—everything from designing lead-free bullets to

developing technologies for the first paintless aircraft, the Joint Strike Fighter (painting and depainting is the source of over 80 percent of our hazardous waste).

…[E]nvironmental education and training is a critical link to meeting our environmental objectives. This center is an integral part of achieving our environmental education and training goals. Our program has five parts.

- First, environmental education is provided to all DoD [Department of Defense] employees worldwide from the newest recruit to the most senior general.

- Second, training courses are available to all our environmental professionals. Last year, this center alone taught over 8,000 people in everything from emergency spill response and hazardous materials management, to water quality sampling and ecosystems management techniques.

- Third, we have a special program to educate what we call our "acquisition" work force. This is particularly important because much of our hazardous waste is created in the acquisition process, where tanks, airplanes, ships, weapons and other equipment are designed, built and purchased.

- Fourth, environmental education is offered at the department's senior military leadership schools. We are preparing future generals and admirals, not only to make sure they can manage hazardous materials, but to think about where and under what circumstances environmental factors contribute to conflict and instability, and how to protect troops and the environment during military operations. Gen. [Anthony C.] Zinni, commander in chief of the Central Command, who will command our troops should we be forced to take military action against Iraq, is one of the most knowledgeable generals on how environmental factors are important in military operations…

- Lastly,…the defense environmental community has a strong commitment to sharing our environmental expertise with people who live in communities surrounding installations. Almost all installations have a wide range of environmental education facilities and programs.

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Statements by Daniel R. Glickman
U.S. Secretary of Agriculture

Excerpts from Secretary Glickman's remarks on the occasion of the release of the *U.S. Action Plan on Food Security*, Woodrow Wilson Center, Washington, DC
26 March 1999

With all that this world has achieved—from space travel to organ transplants—perhaps the greatest challenge we face, is one that has eluded us for centuries. One in seven of the world's people suffer from hunger and undernutrition.

Two years ago, I led the U.S. delegation to the World Food Summit in Rome in 1996. 186 countries came together to try to find a way to eradicate the scourge of global hunger. We set a goal of reducing by half the number of undernourished people in the world by the year 2015. That meant helping 400 million people move from hunger to food security in less than 20 years. Each country agreed to create a national plan of action to help reach that goal.

Today I am announcing the *U.S. Action Plan on Food Security*, a giant step toward meeting the commitment we made in Rome. As of today, only the United States and Canada have announced comprehensive food security action plans and together our two countries are taking the lead in this worldwide effort.

History has taught us that it is neither affordable nor productive to simply throw food at the problem. If we are to make actual inroads against hunger, then we can't just rush from famine to famine. To beat hunger, we have to get at its root causes—poverty, income inequality, political instability, inadequate natural resources, lack of infrastructure and more.

The action plan is a road map for ending hunger by using innovating partnerships to unite the public and private sectors. That's why there are no less than 18 federal agencies and departments involved. That's why there are countless individuals, organizations, universities, religious organizations, private companies—you name it—involved.

At the federal level we recognize that international food security depends largely on policy reform around the world. The plan calls for the United States to encourage an enabling environment in foreign countries and to enhance coordination of its foreign assistance with other donor nations; promote freer trade to enhance global access to food; improve research capacity and enhance people's ability to help themselves, particularly through education of girls and women; target more food aid to the most needy and improve the efficiency and effectiveness of food aid programs such as Food for Peace; and support the work of the Codex Alimentarius Commission in setting international food safety standards. *Our Africa: Seeds of Hope* effort is one example of how we are working toward these goals.


Daniel R. Glickman

Of course, hunger and malnutrition are not problems that plague only developing countries. We haven't beaten it here in the United States. No country has which tells us that defeating our enemy is far more complex than simply producing enough food.

…Over the past century we've made enormous progress in our battle against hunger and malnutrition. There's a lot to be proud of. But the bottom line is, the new century will see world population reach nearly eight billion people in just 25 years. There will be more mouths to feed, on top of the hungry

that exist today. If we've learned anything in this crusade, it's that to succeed everyone must participate. Whether it means donating food during a local food drive, or volunteering at a food bank, or working full-time in an anti-hunger organization, or farmers gleaning from their harvest, we all can play a part we all can make a difference.

I close with the words of Woodrow Wilson, "America is not anything if it consists of each of us. It is something only if it consists of all of us." It will take all of us to really defeat hunger and malnutrition. As the world's food superpower, if we succeed, we will set a standard for the entire community of nations, where all people have ready access to good health, nutritious food and a decent standard of living.

Editor's Note: The full text of Secretary Glickman's speech can be found at http://www.usda.gov/news/releases/1999/03/0133. A pdf version of the plan is available at http://www.fas-usda.gov/icd/summit/usactpl.pdf.

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Statements by Bill Richardson
U.S. Secretary of Energy

Excerpts from Secretary Richardson's remarks to the U.S. Oil & Gas Association Meeting, San Antonio, TX
16 October 1998

…There used to be a robust government dialogue on energy, spearheaded by a federal interagency group called the "International Energy Security Group." This group was charged with assessing the implications of—as well as for—the energy sector on our national, economic and environmental security. Energy was deemed so important that the National Security Council had the lead in running this effort.

Unfortunately, we have lost a little of this sense of purpose—along with the valuable clarity it provided—and it is my sincere hope that when I leave DOE [Department of Energy], I will have helped turn complacency into commitment, and apathy into action.

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Statements by Carol M. Browner
Administrator, U.S. Environmental Protection Agency

Excerpts from Administrator Browner's prepared remarks to the Committee on Finance, United States Senate, Washington, DC
28 January 1999

…One of the major goals of EPA's Strategic Plan under the Government Performance and Results Act is aimed at reducing global risks that affect health and environment in the United States. EPA's efforts under this goal are grouped in five major areas: (1) protecting North American ecosystems, including marine and Arctic environments, (2) meeting U.S. commitments under the U.N. Framework Convention on Climate Change, (3) reducing stratospheric ozone depletion in conformance with U.S. commitments under the Montreal Protocol on Substances that Deplete the Ozone Layer, (4) protecting public health and ecosystems from persistent organic pollutants that circulate at global and regional scales, and (5) strengthening environmental protection worldwide and achieving cleaner and more-effective environmental protection in the United States.

EPA's international environmental programs help protect the health and environment of American citizens. They enlist the cooperation of other nations in reducing transboundary and global environmental threats to the United States and reduce the cost of the nation's environmental protection. They also serve the nation's broad foreign policy, economic and national security interests.

…As emphasized by the General Accounting Office in its recent review of international environmental programs across the U.S. government, "EPA's international programs also serve important U.S. economic, foreign policy, and security interests." Working closely with other U.S. agencies, for example, EPA has actively supported regional cooperation under the auspices of the Middle East Peace Process Multilateral Working Group, including bringing together regional parties to cooperate on reducing risks from pesticides, small community wastewater, and preventing and responding to chemical accidents or oil spills.

The Agency's emphasis on community-based environmental management plays an important role in encouraging the development of more responsible, participatory decision-making in countries around the world. Reduced environmental problems can relieve pressures for illegal immigration, promote economic and political stability, and serve other national security interests.

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Statements by David Sandalow
Associate Director for the Global Environment, Council on Environmental Quality

Excerpts from Mr. Sandalow's remarks on President Clinton's meeting with five leading environmental experts from the African continent, Gaborone, Botswana
29 March 1998

…[T]he themes that emerged were, first of all, the linkage between poverty and the environment. Several participants spoke quite eloquently to that, one saying environmental degradation leads to poverty, leads to environmental degradation, and the cycle continues.

A second theme that emerged was the importance of engaging local communities in managing natural resources and protecting the environment. A third theme that emerged was the need for broad public education including education of children in order to address environmental issues.

…Desertification, the spread of deserts and the degrading of drylands, is a large problem in Africa and a main priority of the Africans in discussions about the environment. Desertification, or the degrading of the drylands, results from over-grazing, from agricultural practices such as mono-cropping, from over-utilization of limited water supplies, and from drought.

The international community has been engaged in efforts to combat desertification on this continent and other continents for quite a while, and there is now an international treaty called the Desertification Convention, agreed to several years ago.

I should say that the convention is a good government treaty. It has innovative provisions to encourage local governments and communities to get involved in efforts to fight the spread of deserts—in this way, it is very resonant with the discussion that the President had at the roundtable today—and it also has mechanisms to improve the coordination of foreign assistance. It imposes no obligations on the United States.

A second area in which we're announcing new efforts is in promoting community-based natural resource management; again, significant resonance with the discussion today. The United States already is spending roughly US $80 million a year for environmental assistance in Africa.

…Finally, is the topic of climate change, an environmental topic that has received considerable attention in the last several months. Here in Africa, erratic weather patterns have been seen, both in Southern Africa and in Eastern Africa. In Eastern Africa there has been very heavy rainfall in the last several months. President Clinton today announced that NASA will initiate the first ever scientific assessment of the environment in Southern Africa. Working with local partners, NASA is going to use satellite and ground-based technologies to provide an assessment for measuring changes in the environment, improving drought prediction, and helping assess the impact of climate change…

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Statements by J. Brian Atwood
Administrator, U.S. Agency for International Development

Excerpts from Administrator Atwood's remarks at the University of Texas Law School, Austin, TX
12 February 1998

…There is a clear connection between large populations of young people, a lack of economic opportunity and the potential for societies to collapse in violence. A variety of prominent organizations ranging from the Central Intelligence Agency to the Carnegie Commission on Violence, to the Congressional Budget Office, have looked at the factors that cause nations to erupt into civil war. While the methodologies used by these organizations in their studies varied, there was a remarkable confluence in their findings.

Those nations at greatest risk were characterized as sharing common dynamics: high infant mortality rates, rapid population growth, high population density, large youth populations, a lack of strong democratic institutions, a history of ethnic disputes, and sharp and severe economic distress. As the Congressional Budget Office study found, there is "A fairly striking correlation between economic malaise on the one hand and domestic unrest on the other."

Now when you consider the 1.3 billion people living on a dollar a day and the three billion people we will have on the planet under the age of twenty, you see that around the globe the ground is extraordinarily fertile for more of the conflicts we have seen since the end of the Cold War. Equally clearly, the international community needs to do a better job addressing these fundamental underpinnings of social unrest and underdevelopment or we will pay a very high price. The human, social and economic costs of failed nation states are immense and many of these conflicts have been propelled, in part, by populations of disaffected youth.

The bottom line is: we need to begin thinking in terms of prevention if we are ever going to get ahead of the curve. And we need to pay more attention to these young people. The problem is that a great many people have a hard time thinking about the world as it is, not as it was. We still spend more time studying the bends in the river rather than its currents. It is still considered soft-headed to examine development problems like poverty, environmental decay and the youth explosion even though it is clear that these phenomena produce war, refugees, terrorists and drug traffickers.

As a nation we find it easier to spend US $2 billion on a single Seawolf submarine than to spend US $2 billion dollars on a development assistance budget that today may offer more security than a submarine. U.S. foreign aid programs account for less than one half of one percent of the federal budget. The costs of prevention are minuscule when compared with the costs of deadly conflict.

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Statements by Lee H. Hamilton
U.S. Congressman from Indiana

Excerpts from Congressman Hamilton's remarks on Earth Day 1998, Washington, DC
29 April 1998

…On this, the 28th anniversary of Earth Day, we can take great pride in the advances that have been made in environmental protection. We have succeeded in reducing the levels of lead and other dangerous pollutants from the air. Lakes and rivers, once so contaminated they could catch on fire, now

support large fish populations. Forests are rebounding. Endangered species, like the eagle and the buffalo, have been saved from extinction and are now thriving.


Lee H. Hamilton

…Despite our achievements, we face daunting environmental challenges. First, a growing population and expanding economy continue to put stresses on our environment.

…Second, the environmental challenges are more complicated…Furthermore, many environmental problems, like global warming, ozone depletion, and threats to our fisheries, are global in nature, but achieving global consensus on any issue is not easy.

Third, our environmental laws need updating…I believe we need to rethink how we regulate the environment.

…First, we should find market-based solutions to environmental problems …Second, we should encourage cooperation between the federal government and the regulated community…Third, we should give more discretion to state and local governments in managing environmental problems because they are often closer to the problems, and may have better ideas about solving them in innovating, cost-effective ways. Fourth, we should allocate federal resources to the most pressing environmental problems, particularly in an era of tight federal budgets…Federal agencies should conduct risk assessment, based on scientific evidence, and cost-benefit analysis before implementing new regulations.

Excerpts from Congressman Hamilton's remarks on U.S. Aid to Africa on National Public Radio's "Talk of the Nation"
18 May 1998

…U.S. assistance helps address transnational problems: population growth, environmental degradation, refugee flows…problems that are not confined to the borders of a state. A strong and properly directed development assistance program is an important line of defense against these threats…

[Editor's Note: Lee H. Hamilton retired from The U.S. Congress in January 1999 and became director of The Woodrow Wilson Center.]

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Statements by Richard G. Lugar
U.S. Senator from Indiana

Excerpts from Senator Lugar's remarks at a meeting entitled "The New Petroleum: Energy and National Security" at the Woodrow Wilson Center, Washington, DC
17 March 1999

…For lesser developed countries who are often burdened with debt as a result of having to import oil, cellulosic ethanol offers some striking advantages. As an example, consider Sierra Leone, a West African country of five million people recently in the news with reports of extreme poverty and virtual collapse of its civil society. With no proven commercially viable oil reserves, Sierra Leone is forced to import all of its petroleum products in refined form. These energy imports make up a large percentage of the country's total import bill of $211 million, and contrast with exports of less than $40 million. Sierra Leone's national debt stands at over $1.1 billion. Approximately two-thirds of the imported petroleum is funded by donor aid. For a country facing civil war, rapid population growth, and widespread slash-and-burn agriculture, it is almost inconceivable that significant amounts of foreign aid need be devoted towards compensation of national and multinational oil companies. Sierra Leone is being strangled by its reliance on imported oil.

With the vast majority of Sierra Leonians engaged in subsistence farming and large tracts of arable land, the country could benefit immensely from the new biofuel technology. Freed from its oily noose, aid dollars could be spent on programs that promoted environmentally sustainable agricultural practices with a new source for income provided by agricultural wastes and energy crops. Land damaged by slash-and-burn agriculture could be planted with native grasses or trees, replenishing the soil while at the same time providing a local source of income and fuel. There are likely to be even larger effects on rural development if biomass ethanol production can lead toward using plant matter for other products as well, such as biochemicals and electrical energy. The cleanliness of renewable fuel technologies makes them particularly attractive to countries like Sierra Leone that lack a sophisticated infrastructure or network of regulatory controls.


Richard G. Lugar

Energy is vital to a country's security and standard of living. History is littered with examples of nations that have gone to war in order to procure access to energy supplies. With the need for affordable energy rising with increasing population, and the transportation sector fueled almost exclusively by fossil fuels, the Middle East will control something approaching three-quarters of the world's oil in the coming century, providing that unstable region with a disproportionate leverage over diplomatic affairs. Dependence on the Middle East entails a risk of a repeat of the international crises of 1973, 1979 and 1990—or worse. At a time when the United States confronts an ill-defined and confused drama of events on the international stage, including an increasingly bellicose China, and nuclear and missile technology proliferation to North Korea, it seems clear we should dedicate a relatively miniscule amount of money toward research that could lead to a revolution in the way we produce and consume energy. Or as presented in the recent Report of the President's Committee of Advisors on Science and Technology (PCAST), a distinguished panel of scientists and industrial experts, "…the security of the United States is at

least as likely to be imperiled in the first half of the next century by the consequences of inadequacies in the energy options available to the world as by inadequacies in the capabilities of U.S. weapons systems." The report succinctly concludes, "It is striking that the Federal government spends about twenty times more R&D money on the latter problem than on the former."

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Statements by Javier Solana
Secretary General, NATO

Excerpts from Secretary General Solana's remarks to the Oxford University Union Society, Oxford, United Kingdom
13 May 1998

…Nor is security cooperation confined to traditionally military matters. NATO's civil emergency planners are working with our Partners to establish a disaster response capability. NATO played a key role in providing advice and coordinating assistance during last summer's floods in Poland and the Czech Republic. Through our Science for Peace program, Western expertise can be shared to tackle problems as diverse as the conversion of obsolete and often dangerous defense equipment and the environmental disaster in the Aral Sea.

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Statements by Louise Fréchette
Deputy Secretary-General, United Nations

Remarks by Deputy Secretary-General Fréchette to the Forum on United Nations Sustainable Development Programs, American University, Washington, DC
23 February 1999

…We can no longer talk about economic development, environmental protection and social progress as separate matters. Rather, they are mutually reinforcing components of a single, urgent mission.

We now understand that we should not create jobs and raise incomes with short-term development that fails to take the costs of environmental damage into account. But we must acknowledge, just the same, that many problems, particularly in developing countries, can only be solved through rapid, steady economic growth, along with sound environmental and social policies.

More broadly, we see as well the links between sustainable development and most of the key issues on the international agenda. Poverty perpetuates economic stagnation, social deprivation, ill health and environmental degradation. Population pressures put strains on resources. A lack of good governance is an obstacle to effective public administration and the delivery of public services such as clean water, sanitation and infrastructure.

There is even a connection to the maintenance of peace and security, since the roots of conflict and political instability may also be found in competition over increasingly scarce resources such as land, oil or water.

We knew all of this, of course, intuitively and from long experience. Yet it wasn't until the publication of "Our Common Future" in 1987 that the many strands coalesced into the overarching idea of sustainable development.

Just five years later, the landmark meeting in Rio gave the concept a global stamp of approval. And now, just seven years along the road from Rio, more than 150 countries have established national councils on sustainable development or similar bodies, and almost 2,000 municipal governments in 49 countries are pursuing local Agenda 21 action plans.

Also during that time, a series of world conferences on other major issues reinforced the overall message: that along with interdependence among nations there is interdependence among issues, and that development must be approached in a comprehensive, integrated manner, the future firmly in view.

The net result is an internationally agreed framework for action. But let us not be lulled by what we have accomplished on paper. We should measure our gains not in conferences held or promises made but by what happens on the ground. And so we must ask: How well have we progressed since the Earth Summit? Has the United Nations—from its policy-making bodies to its agencies and programs at the country-level—risen to the challenge? Have we moved from concept to action, from intention to implementation?

As you know, two years ago the General Assembly convened a special session to carry out just such an assessment. A "critical trends" report was issued on that occasion that looked ahead to the next quarter century and noted significant progress as well as some reasons to fear the worst.

On the positive side of the ledger, growth in world population is slowing, food production is rising, the majority of people are living longer, healthier lives, and environmental quality in some regions is improving. Legally binding conventions on climate change, biodiversity and desertification have entered into force. And we have shown that determined policy intervention can make a difference in response to threats such as industrial pollution and depletion of the ozone layer.

At the same time, there is a growing scarcity of freshwater, a loss of forests and of productive agricultural land, and increasing poverty and inequality in many parts of the developing world. The fallout of AIDS has proved to be even more widespread and devastating than had been feared, especially for the economies of many African countries. Government subsidies continue to disguise the actual costs of natural resources, leading to their depletion and overuse. And we have yet to put in place sustainable patterns of energy production and use—our main concern for the long-term.

The conclusion in 1997 was that while global catastrophe was not imminent, business-as-usual was not likely to result in long-term sustainable development. That remains true today.

The role of the multilateral system in changing this state of affairs is twofold, simultaneously global and local. Globally, issues such as climate change and marine pollution that cut

across national frontiers are among the quintessential "problems without passports" which, like crime, drug-trafficking and the spread of disease, cry out for an international response.

But the global perspective is not the only one. While global threats and the global dimension of modern life have received the lion's share of attention in recent years, it is the local level that is closest to the world's people, and it is at the local level that the most creative and tangible problem-solving is being done.

The local level is also where the United Nations and its system of agencies and programs are most present in people's lives, helping countries to meet their peoples' needs. Indeed, for most men, women and children the struggle for sustainable development begins not at United Nations conferences or policy sessions but at home, amid grinding poverty, with the daily search for basics like clean water, sanitation, shelter and some fuel with which to cook and heat.

So if the role of the multilateral system is clear, still we must have a multilateral system that works. The Earth Summit served as a catalyst for changes at the United Nations which have brought us closer to that goal. The Commission on Sustainable Development, created immediately after Rio, has become a central forum to review and promote implementation of Agenda 21 and other agreements. The Global Environment Facility has emerged as an innovative financial mechanism.

We have also, in the spirit of Rio and the spirit of United Nations reform, closely examined the United Nations Environment Programme (UNEP) and Habitat, the United Nations Centre for Human Settlements. For more than 25 years, UNEP has monitored the state of the environment, raised awareness and provided invaluable policy guidance. Today, as a focal point, within and beyond the United Nations system, for the environmental dimension of sustainable development, a strong UNEP is essential for us all.

Towards that end, following a comprehensive review, the Secretary-General has submitted to the General Assembly a set of recommendations aimed at revitalizing both UNEP and Habitat. The recommendations covering UNEP are designed to improve coordination, forge closer links between UNEP and the environment-related conventions, and in general give UNEP greater political and financial backing. UNEP must have the status, strength and resources it needs if it is to function effectively as the environmental agency of the world community.

The changes at UNEP and Habitat are also part of the broader process of reform initiated two years ago by the Secretary-General. That effort has brought better coordination among the Organization's disparate entities, enabling them to make the necessary linkages among issues and working more effectively together at the country level.

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Statements by James Gustave Speth
Administrator, United Nations Development Programme (UNDP)

Excerpts from Administrator Speth's remarks on World Environment Day
5 June 1998

I am pleased to pay tribute to 1998 World Environment Day's theme, *For Life on Earth: Save our Seas.* The world's oceans are resilient and powerful, but they are finite ecosystems, which are heavily affected by human activity. Managing oceans responsibly today will determine whether they remain a vital and renewable resource for everyone in the next millennium.

Unfortunately, we have not been good stewards of our oceans and coasts. Rapid coastal population growth and the resulting increase in waste disposal, along with intensive agricultural and industrial pollution on or near shorelines, have damaged reefs and other vital marine habitats. More than two-thirds of the world's people live in coastal areas, and more than half the world's coastal wetlands have been destroyed by urban development. The loss of these wetlands may be costing coastal fishing communities as much as 4.7 million tons of fish a year. These pressures, combined with the vast over-capacity of international fishing fleets, have contributed to the well-publicized collapse of major fisheries around the world. Moreover, the erosion of ocean biodiversity is alarming. For the people whose livelihoods depend on our oceans, these trends could spell disaster, pushing thousands into poverty.

UNDP supports an expanding portfolio of projects that build capacity in the areas of fisheries management, mariculture, aquaculture and the sustainable use of coastal and deep-water marine ecosystems. Many of these projects are being funded by the Global Environment Facility, which UNDP co-sponsors with the World Bank and the UN Environment Programme (UNEP). UNDP is also assisting UNEP in translating regional coastal management policies into action.

In January, UNDP launched a Strategic Initiative for Ocean and Coastal Management to protect the world's seas by exchanging information about the marine environment among countries and project managers and alerting scientists and policymakers to coastal management issues and the resources to deal with them. Such efforts are part of UNDP's Water Strategy, which combines the management of fresh water resources with the management of aquatic ecosystems, ranging from watersheds, rivers, streams, lakes, aquifers, deltas, wetlands, coastal zones and oceans.

Oceans must remain at the top of the global agenda. In recognition of the importance of our water resources, the United Nations has declared 1998 the International Year of the Ocean. This action, along with the adoption of the UN Convention on the Law of the Sea, are milestones in the international community's commitment to reversing the rapid depletion of marine ecosystems. All countries must redouble their efforts to ensure that such agreements are honored and that marine resources are managed sustainably. Nations must learn to share

the ocean's living resources, or risk depriving future generations of the wealth and beauty they have always brought to humanity.

Excerpts from Administrator Speth's remarks on the UN Framework Convention for Climate Change, Buenos Aires, Argentina
11 November 1998

…[E]xtreme weather events are predicted by many to be one consequence of global warming, the challenge now before us. We have already come a long way. The Kyoto Protocol includes the commitments for Annex I countries to reduce their greenhouse gas emissions. I urge all Parties to ratify this landmark agreement. There are no sound reasons for costly delays.

At a press briefing yesterday, UNDP and the World Resources Institute released a report documenting how developing countries are already participating meaningfully in reducing climate-altering emissions. The initiatives we have reported—in China, India, Brazil, and elsewhere—are only the beginning, but they are certainly meaningful. China, for example, has sharply reduced coal subsidies and improved energy efficiency. Without these and other measures, its emissions of carbon dioxide would be 50 per cent higher than they are today.

It will take some 100 years before the cumulative carbon dioxide emissions from developing countries equal those of industrialized countries. Yet changes in the earth's climate will hit developing countries first—and hardest. We have already seen, with natural phenomena such as hurricanes, typhoons and El Niño, the vulnerability of development to climate events. Generations of poverty, and deforestation for fuel and farming have left many areas barren and more vulnerable to the destructive forces of floods and mudslides.

…Yet, we need not always work through conventional approaches that replicate unsustainable energy patterns. As the world community agreed at Rio, climate change objectives and poverty eradication can and must be reconciled. In the years since Rio, much has been accomplished in the promotion of new and different approaches to energy. Commercially viable and environmentally sound technologies are becoming increasingly available. Opportunities lie primarily in more efficient use of energy, enhanced use of renewable energy sources, introduction of new and better performing technologies, and improved land use and forestry practices. We must work together to promote these opportunities in order to fulfill our sustainable development and climate change mitigation objectives simultaneously.

Industrialized countries, responsible for the bulk of greenhouse gas emissions, have recognized that it is in everyone's interest that they assist developing countries in the implementation of sustainable energy strategies. The problem is that the promises of greater assistance made at Rio and elsewhere are not being fulfilled. Development finance, sound technology choices, technology transfer, environmentally-conscious pricing and trade policies, technical assistance and new partnerships with the private sector are all needed. And no mechanisms under the Kyoto Protocol can substitute for the need for an urgent reversal of recent declines in Official Development Assistance.

We at UNDP have stressed the close links that exist between poverty eradication and environmental sustainability. The ninth meeting of the Commission on Sustainable Development (CSD) will provide a major opportunity to review the necessary changes needed in the global energy system in order to support development that is pro-poor and pro-environment. In our work, we are reaching out to the private sector and to our partners in the United Nations system. UNDP has initiated, together with the United Nations Department of Social and Economic Affairs and the World Energy Council, a "World Energy Assessment" to provide a substantive input for the preparatory process for the Ninth CSD.

Excerpts by Administrator Speth's message on World Water Day
22 March 1999

Water is of fundamental importance to all social and economic activity and thus integral to sustainable human development. Eighty percent of common diseases in developing countries are caused either by unsafe water or by lack of sanitation. Water-borne diseases kill over 10,000 people a day, most of them children.

The theme of this year's World Water Day is "Everyone Lives Downstream". Perhaps the best demonstration of this is the way that rivers and streams flow across mountains, villages, urban settlements and even countries. Indeed, UNDP's water strategy… emphasizes the continuum of watersheds, rivers, lakes and aquifers to deltas, wetlands, coastal zones and oceans.

Many of our actions or decisions—whether the issue is housing, transportation, energy, agriculture, or economic development—are potentially linked to the use of our water resources. Likewise, many critical mistakes that can result from poorly planned development—such as storm drain overflow, mine drainage, nutrient loading, over-irrigation, sewage overflow, excessive withdrawal of groundwater, or topsoil erosion from clear-cut forests—show up in our water in the form of toxic pollution, dead fish, and dried-up streams. Let us not forget that about 80 percent of all diseases, and more than a third of all deaths in developing countries are caused by contaminated water. More than one billion people drink unsafe water, or invest hours every day collecting clean water.

Fifty-five percent of UNDP country offices now implement projects in the water sector, reflecting the high priority water holds as a concern for development and as an entry point for poverty alleviation. During the 1990s, UNDP has invested more than US$100 million annually in projects that support directly or indirectly water resources development. UNDP's project portfolio in the water sector ranges from the development of hand pumps at the community level to regional projects aimed at protecting international water bodies. Through the Global Environment Facility, UNDP, UNEP and the World Bank support local, regional and global projects that aim to protect

international water bodies, wetlands and biodiversity.

Projects that are especially close to this year's theme of World Water Day involve international river basins. One example is UNDP's support for the Nile Basin Framework Initiative and the related UNDP-World Bank Partnership Agreement on the International Waters Initiative. The goal of the riparians of these shared river basins is not only that individual nations benefit but also that there is an optimal use of the resource and the sustainable development of the basins for the benefit of all. Herein lies a shared vision that may be adopted by the global community for the benefit of the world as a whole, and as a guide for the future of water management on this World Water Day.

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Statements by Klaus Töpfer
Executive Director, United Nations Environment Programme (UNEP)

Remarks by Executive Director Töpfer at the signing of an agreement strengthening cooperation between UNEP and United Nations Population Fund, Geneva, Switzerland
9 April 1999

A stabilized population is increasingly seen as an essential ingredient of environmental sustainability at local, national and global levels. Similarly, balanced patterns of consumption and production, which foster sustainable resource use and prevent environmental degradation are seen as key elements of an integrated approach to achieving societies' population and development goals. This new Agreement will help UNEP and UNFPA better understand the complexities of the issues involved and thus facilitate the search for solutions.

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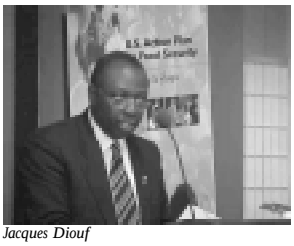
Statements by Jacques Diouf
Director-General, Food and Agriculture Organization of the United Nations

Excerpts from Director-General Diouf's remarks on the occasion of the release of the *U.S. Action Plan on Food Security*, Woodrow Wilson Center, Washington, DC
26 March 1999

The *U.S. Action Plan* sets out priorities and actions to address hunger both at home and in the developing world. While recognizing that the vast majority of households in America are food secure, the Plan finds that 12 million households in the United States are food insecure, that of these, nearly four million are hungry at some point over the course of a year, and that in a recent opinion poll, Americans said they considered domestic hunger to be one of the most serious national problems.

At the Summit countries pledged to reduce the number of undernourished people by half by no later than the year 2015. This was a minimum goal, not a maximum goal. So it is gratifying to note that the United States has adopted an even broader commitment as a domestic goal, and is developing a target for reducing food insecurity in the U.S. through its national Healthy People 2010 initiative.

At the same time, the Plan observes that the link between world food security and the well-being of Americans is not clearly understood. To address this problem, the United States will conduct a national "Food for All" campaign and will highlight the linkages among domestic and international agriculture, hunger, food security and poverty by sharing such information with Congress, the public, and the U.S. agricultural community.


Jacques Diouf

Such an action will undoubtedly constitute a major step in spreading the awareness that in today's interdependent world, hunger anywhere is a problem for all. I believe that the seed will fall on fertile ground, for I have always been convinced that there is an important constituency in the United States which is firmly and unselfishly dedicated to the goal of freedom from hunger. This was the ideal which led to the founding of FAO, and I need hardly recall that the United States was instrumental—indeed the leader—in that process.

I take heart from the results of the University of Maryland public opinion study which found that a strong majority of the people polled favored maintaining or increasing aid to sustainable development and humanitarian programs. This can only be to the benefit of the crucially important actions outlined in sections of the Plan which address the "international dimension."

Those actions are too numerous to mention, but they bear witness to the will of the U.S. to continue playing its essential role in the international development arena, enhancing the focus of its aid programs on the multiple facets of food security.

They also recognize the needs of the low-income, food-deficit countries. There is special mention of the problems of Africa, and important initiatives to help African countries address them. And acknowledgement of the importance of implementing the Marrakech Decision on Measures Concerning the Least Developed and Net Food Importing Countries.

I am naturally gratified by the support for crucial programs such as the Codex Alimentarius Commission, run jointly by FAO and the World Health Organization, and the food insecurity and vulnerability information and mapping systems (FIVIMS), in which FAO is playing a major catalytic role with other partners. The Plan also mentions important work to be done on unifying international early warning systems with global coverage, on which FAO looks forward to continuing and strengthening dialogue and cooperation with the United States.

The message which comes through in the Plan, loud and clear, is that there are solutions to hunger, but that unless effective action is taken now, we will not meet even the minimum target set by the Summit.

We in FAO also share the conclusion that solutions are expensive, but affordable. Although different approaches and

Left to right: Geoffrey D. Dabelko, Daniel R. Glickman, and Jacques Diouf

methodologies can lead to varying quantitative estimates of the resources to be mobilized internationally, it is acknowledged that present downward trends in official development assistance must be reversed, and that the increase required is not beyond reach. The Plan calls it "sustained but modest."

We trust that the donor community will respond to this challenge, for much depends on it. Primary responsibility for ensuring the food security of their peoples rests with countries and national governments. This is an incontrovertible fact, reaffirmed in the Summit Plan of Action.

But the playing field is not level, the gap between the "haves" and the "have-nots" in our global community is widening, and national responsibility must be complemented by international solidarity.

I can only echo the call in the Plan for a concerted partnership of all nations to reach the World Food Summit goal, and reiterate my hope—and my conviction—that the United States will continue to be in the forefront of progress towards a food-secure future for humanity. This Plan provides a beacon along the way.

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Statements by Nafis Sadik
Executive Director, United Nations Population Fund (UNFPA)

Remarks by Executive Director Sadik at the signing of an agreement strengthening cooperation between UNEP [United Nations Environment Programme] and UNFPA, Geneva, Switzerland
9 April 1999

It is imperative that a holistic approach be undertaken to address complex global challenges. The current growth and character of world population, the pressure on the environment and natural resources, whether on water, land, air or energy, demand our joint collaborative experiences and foresight. Building a better future for developed and developing nations alike calls for urgent action and worldwide participation. Our joint efforts will serve as a great outreach possibility for both our organizations to promote the development of new, sustainable policies for the future. Sustainability is key for population concerns as it is for environmental concerns. The future of this planet earth and its people depend on the decisions we make today; population and environmental issues are interdependent and must be resolved as such.

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Statements by Gro Harlem Brundtland
Director-General, World Health Organization (WHO)

Excerpts from Director-General Brundtland's remarks at the Woodrow Wilson Center, Washington, D.C.
22 September 1998

…I feel in many ways that I have spent much of my time on these specific linkages [between population, environment, health and security issues], and trying to understand them.

…We have to continue our fight against communicable diseases, which still haunt the world, especially the poor. We are engaging across a broad spectrum, and many gaps that we see between rich and poor are at least as wide as they were half a century ago, and some of them are even widening between nations and within nations. So while in most countries people live longer, life expectancy is decreasing in some others. Between 1975 and 1995, 16 countries, with a combined population of 300 million, experienced such a decrease. To many people this is surprising. Many of those countries are African countries, and recently even European countries experienced a reduction in life expectancy.

Gro Harlem Brundtland

The first World Health Assembly, in June of 1948, listed its top priorities in the following order: malaria, maternal and child health, tuberculosis, sexually transmitted diseases, nutrition, and environmental sanitation. Looking at it today, we see that they are all critical issues we have to deal with. Malaria is hitting back again, killing 3000 children every day, especially in Africa. In defining the Roll-Back Malaria Project of WHO, we will do all we can to learn from the successes and failures of the past, and mount a realistic combat to significantly reduce morbidity and mortality from malaria. WHO was created 50 years ago, and the founding fathers and mothers knew perfectly well, even then, that there are no health sanctuaries. The suffering of the many must be a common concern in an interdependent world.

We also have to mobilize in our fight against the non-communicable diseases too well known in the North, but now spreading like an epidemic in developing countries. We have to look ahead to grasp the changing time, ready and able to give the best advice on aging, on mental health, and on the

environment, as well as new challenges from injuries and violence. As much of the world steps confidently into the future, it cannot, must not, ignore the plight of those in danger of being left behind. More than one billion people live in extreme poverty, a condition of life characterized by malnutrition, illiteracy, and ill health; a condition of life beneath any reasonable definition of human decency. In the balance sheet of our century, inequality remains one of the largest social debts, but it need not be that way. We have the evidence that investing in health yields tangible results. Healthy populations help build healthy communities and healthy economies, and we need to bring this message to political decision-makers, to presidents, prime ministers and finance ministers. I believe since the future is owned and shared by the many, and not by the fortunate few, it must be for the poor, most of all, that WHO pledges itself to make a difference. WHO however, cannot do it alone, nobody can do it alone. We are, in one way or another, in it together. So that is why WHO will have to reach out to the other UN agencies; to UNICEF, UNDP, UNFPA, the World Bank, IMF [International Monetary Fund] and WTO [World Trade Organization]. And these three last ones are not less important than the first I mentioned. That is why we have to reach out to civil society and to NGOs [nongovernmental organizations], why we have to reach out to the private sector, to private industry, and mobilize together the immense creative potential for innovations.

I have called a number of roundtable meetings with industry. There may be areas, certainly, where our views differ, but I believe in open dialogue and in the search for opportunities, because there is so much that we can achieve together. Take the critical area of immunization that the Ambassador was mentioning on polio, for instance. WHO will put renewed emphasis on its efforts to forward immunization, and to engage in a partnership with other agencies and the private sector to stimulate research towards breakthroughs. In recent years some have questioned WHO's leadership role in this field. Some have even argued for the creation of a new body to coordinate vaccination efforts. I believe that would be a mistake. My attitude is simple. An organization has to earn its leadership and that is what we are ready to do. WHO is the lead agency in health, with firsthand knowledge of the anatomy and burden of the world's communicable diseases. Not by saying that we will do all, but by forging a new working relationship with our partners, providing our strengths and drawing up on the strengths of others. I pledge to demonstrate that WHO can make a real difference in this area.

Left to Right: Donna E. Shalala, Tony Fauci, and Gro Harlem Brundtland

America's Defense Monitor is a weekly television series broadcast on PBS and cable stations across the United States. It is a production of the Center for Defense Information (CDI), an independent organization based in Washington D.C. The series presents critical information on the military's impact on the political system, the economy, the environment, and society as a whole and features interviews with key experts, policymakers, and community leaders.

Photograph from the *America's Defense Monitor* episode, "Water, Land, People, & Conflict." Courtesy of CDI.

"Water, Land, People, & Conflict" was a recent episode that looked at how environmental problems, population growth, and growing shortages of vital resources threaten peace in the world community. The show featured comments from:

Michael Renner, Senior Researcher, Worldwatch Institute
Jessica Mathews, President, Carnegie Endowment for International Peace
Geoffrey D. Dabelko, Director, Environmental Change and Security Project, Woodrow Wilson Center
Allen Hammond, Senior Scientist, World Resources Institute
Robert Engelman, Director, Population and Environment Program, Population Action International

To order a copy of this show, please visit *America's Defense Monitor* on the Internet at http://www.cdi.org/adm/. Videotapes may be ordered online, by mail, or by fax.

New Publications

The Environment, Scarcity, and Violence

Thomas F. Homer-Dixon

Princeton, NJ: Princeton University Press, 1999. 253 pp.

Reviewed by David Dessler

This ambitious book is an important contribution to the increasingly sophisticated and wide-ranging debate over environmental change and security. Thomas Homer-Dixon, the author of numerous publications and the director of two large-scale research projects on environmental change and conflict (the Project on Population, Environment and Security, and the Project on Environmental Change and Acute Conflict), has been over the past decade one of the field's most prominent and influential contributors. This book synthesizes work from these earlier projects and develops an integrative framework for grasping the disparate findings they have generated. The result is an impressive work of scholarship that is sure to figure prominently in ongoing debates over environmental change, conflict, and security.

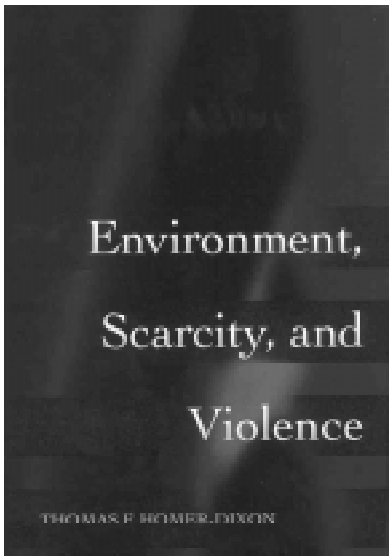
Homer-Dixon's "key finding" is that "scarcity of renewable resources—or what I call *environmental scarcity*—can contribute to civil violence, including insurgencies and ethnic clashes" (p. 177). This conclusion leads the author to predict that "in coming decades the incidence of such violence will probably increase as scarcities of cropland, freshwater, and forests worsen in many parts of the developing world" (ibid.). Homer-Dixon is appropriately cautious in advancing these claims. He is careful to note that environmental scarcity is neither a necessary nor sufficient cause of such conflict, that it plays a negligible causal role in many civil conflicts, and that even when environmental scarcity is a cause of conflict, its influence is typically mediated by social, political, and economic factors (chapters 1 and 2). The author systematically describes the sources and trends of environmental scarcity in the world (chapter 4), and identifies their negative social effects (chapter 5). He discusses the types of technical and social ingenuity needed to promote nondisruptive adaptation to scarcity (chapter 6), and finally pulls these various elements together into a general model of how environmental change and its social effects can cause civil violence of various types (chapter 7). The discussion is nicely structured and the writing is clear, straightforward, and accessible throughout.

Homer-Dixon's main contribution may be the framework and vocabulary he develops to transcend traditional debates over the relationship between population growth, resource scarcity, economic prosperity, and conflict. He identifies three traditional positions in this debate: the neo-Malthusians, who emphasize the limits that finite resources place on growth and prosperity; the economic optimists, who see few, if any, such limits; and the distributionalists, who focus not on the stock of resources and the alleged limits to growth they may imply, but on the effects that various distributions of wealth and power can have on economic growth and well-being. Homer-Dixon's strategy is to integrate physical variables (stocks of natural resources, population size and growth, and resource-consumption per capita) and social factors (market dynamics, and social and economic structures) in a single model that emphasizes the importance of thresholds, interdependence, and interactivity within complex environmental systems. For Homer-Dixon, "the metaphors of stability, equilibrium, and balance are not appropriate to describe complex, interdependent systems" like those of environmental change. "Instead, metaphors of anarchy, flux, and constant turmoil are more apt." He argues that "these ecosystem characteristics mean that societies must be able to supply more social and technical ingenuity to adapt to rising scarcity" (p. 41-2).

Another important contribution of the book is Homer-Dixon's focus on the role of knowledge and ideas, or lack thereof, in explaining a society's ability to adapt smoothly to environmental scarcity. Calling this stock of knowledge and ideas "ingenuity," the author argues that "a society must be able to supply enough ingenuity at the right places and times" to cope successfully with scarcity (p. 107). Both technical ingenuity (e.g., agricultural technologies that compensate for environmental loss) and social ingenuity (appropriate policies, institutions and organizations) are required. Homer-Dixon points to an "ingenuity gap" in many societies that leaves them vulnerable to the most pernicious effects of environmental change and degradation. He links his analysis of ingenuity to the general model of ecosystem change, pointing out that the need for ingenuity (particularly of the social variety) is most pressing in complex systems of environmental change that exhibit nonlinearity and interactive responses to human perturbations.

The volume's two main weaknesses are broadly methodological. The first concerns the definition of "environmental scarcity." In Homer-Dixon's framework, "scarcity" does not necessarily represent an insufficient supply of or excess demand for a resource. Scarcity also results from purely "structural" sources that are fundamentally social or political in character (p. 48). For example,

violence in the Senegal River Valley in 1989 between Arabs and blacks, we learn, was sparked when the Mauritanian elite, "which consists primarily of white Moors. . . rewrote legislation governing land ownership, effectively abrogating the rights of black Africans to continue farming, herding, and fishing along the Mauritanian riverbank" (p. 77). But in this episode, it turned out that the resources in question—especially arable land, suitable for intensive farming—were *increasing* in availability. The resource pie was growing, not shrinking. Indeed, the Mauritanian elite meant to take advantage of just this fact in rewriting the relevant land ownership laws. However, Homer-Dixon argues that this episode reveals how environmental *scarcity* can lead to violent conflict. "A powerful elite. . . changed property rights and resource distribution in its own favor, which produced a sudden increase in resource scarcity for an ethnic minority, expulsion of the minority, and ethnic violence" (ibid.).



Including the political determinants of resource shortage into a general definition of "environmental scarcity" is problematic in that it confounds efforts to separate the physical trends contributing to scarcity (population growth, global warming, tropical deforestation, etc.) from the political, economic, and social factors that spark conflict. Homer-Dixon strives to show that environmental scarcity *as distinct from* political and economic factors causes violent conflict (pp. 104-6). Yet he undermines his case by building political factors into his definition of environmental scarcity. More robust conclusions concerning the effects of environmental trends on violent conflict in the developing world are possible only by clearly disentangling the physical sources of such conflict from its political, economic and social determinants.

The other broad methodological problem with Homer-Dixon's framework is the exclusive focus on testing causal claims against the "null hypothesis," the claim that environmental scarcity has *no* effect on conflict at all. Homer-Dixon, recognizing that no major conflicts in the world can be directly attributed to the depletion or degradation of renewable resources, is admirably cautious in advancing claims about the causal role of the environment in violent conflict. But in defending against the more extreme claim that environmental scarcity plays no role in bringing about conflict, Homer-Dixon advances a test that is both too weak and too strong. "I adopt a purely pragmatic criterion for judging environmental scarcity's importance in specific cases of violent conflict," Homer-Dixon writes. "Can the sources and the nature of the conflict, I ask, be adequately understood without environmental scarcity as part of its causal story?" (p. 7). This test is too weak because even a conflict that has political, economic, and/or social determinants as its sufficient conditions may be visibly shaped by environmental factors that play only a shallow or dispensable role. The South African episode, described below, may be one such case. And at the same time, the test is too strong because it may eliminate from the causal equation factors that remain important catalysts of a conflict where the underlying "sources and nature of the conflict" have nothing to do with environmental scarcity. The case of the chronic water shortage in the West Bank (pp. 74-6) perhaps best illustrates this type of situation.

A more convincing methodology would pay less attention to eliminating the null hypothesis (which few if any observers wish to defend in any case) and give closer consideration to the study of rival explanatory accounts. For example, to explain observed patterns of civil violence in South Africa in the 1980s, Homer-Dixon argues that population growth amid a declining resource base led to "resource capture" by powerful warlords who "often tried to maintain power by pointing to resources in neighboring townships and informal settlements and mobilizing their communities to seize them" (p. 98). However, a different study of the same case, by Peter Gastrow, suggests that political violence in South Africa has occurred "not primarily in areas where poverty and deprivation are widespread, but in areas where poverty and poor socio-economic conditions combine with intense political rivalry, particularly between the African National Congress (ANC) and the Inkatha Freedom Party (IFP)." Gastrow argues that in areas where one of these parties is inactive and the other predominates—in the Port Elizabeth area, for example—violence is negligible, despite pressing environmental scarcity. The point here is not that Homer-Dixon is wrong and Gastrow is right, but that Homer-Dixon fails to eliminate such rival accounts in claiming corroboration for his own.

Despite these weaknesses, Homer-Dixon's book marks an important advance in the debate over environmental change and security. It pulls together a vast amount of empirical material and through a stimulating analytical framework develops a provocative argument that moves significantly beyond established lines of debate about the relationship between the environment, scarcity, and conflict. Homer-Dixon demonstrates decisively that older paradigmatic disputes, such as the one pitting neo-Malthusians against economic optimists, are no longer adequate to the task of understanding the social and political implications of environmental change in today's world. The book's arguments are invariably clear, accessible and illuminating, and the book evinces a coherence of vision that is certain to exert a profound influence on scholarship in the coming years. No serious student of environmental change and security will be able to ignore it.

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Contested Grounds: Security and Conflict in the New Environmental Politics

Daniel H. Deudney and Richard A. Matthew, Editors

New York: State University of New York Press, 1999. 312 pp.

Reviewed by Colin H. Kahl

The long awaited volume *Contested Grounds: Security and Conflict in the New Environmental Politics*, edited by Daniel H. Deudney and Richard A. Matthew, is the first major published work to represent the full range and flavor of the contemporary debate surrounding "environmental security." It is a thoughtful and multifaceted attempt on the part of leading scholars to "bring nature back in" to the study of international security affairs. Those already familiar with the field will appreciate updated versions of seminal articles in addition to other excellent essays previously unpublished or not widely available. Those unfamiliar with the field will find the volume to be an indispensable introduction to one of the most important emerging branches of security studies.

The book is divided into three parts. Following a brief introduction by Matthew, Part I of the volume, a single chapter by Deudney, provides a fascinating historical and conceptual discussion of the commonalities between contemporary environmental security concerns and classic works of "geopolitics." Part II contains six mainly theoretical chapters, beginning with an essay by Thomas F. Homer-Dixon reviewing his well-known findings on environmental scarcity as a source of violent conflict. Next follow chapters by Michel Frédérick defending a "realist" conception of environmental security, Kent Hughes Butts making a case for military involvement in environmental protection, and Eric K. Stern arguing for a "comprehensive" conception of environmental security. Part II concludes with two critical chapters by Simon Dalby and Deudney. Dalby emphasizes the North-South clash over the meaning of environmental security and the Northern bias of the current literature, while Deudney provides a comprehensive rebuke of the environmental security research program in an updated version of his seminal *Millennium* article. Part III includes empirical chapters by Miriam Lowi, Jack A. Goldstone, and Ronald J. Deibert. Lowi examines water disputes in the Middle East, Goldstone provides an analysis of demographic and environmental challenges to political stability in China, and Deibert discusses the utility of using U.S. military satellites to address environmental concerns. Part III is followed by a brief conclusion written by Matthew.

The international relations subfield of security studies has traditionally concerned itself with two related research questions: (1) What are the causes of insecurity? and (2) How do security policies and organizations affect individuals and society? In other words, security is sometimes treated as a dependent variable to be explained, while at other times it is treated as an independent variable doing the explaining. The chapters in *Contested Grounds* mirror this bipartite division. Some focus on environmental degradation and resource scarcity as potential sources of insecurity, while others analyze the impact security policies and organizations have on the environment. This review addresses these two approaches in turn.

Security as a Dependent Variable

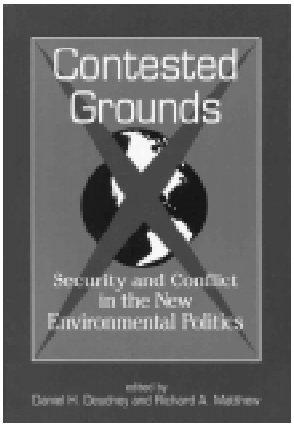
Most of the chapters in *Contested Grounds* treat security as a dependent variable, that is, an outcome to be explained. The authors, however, vary considerably in how they conceptualize this variable. The contributors tend to couch this debate as one involving the definition of "environmental security." In actuality, however, it is a debate over the appropriate conceptualization of "security" and how human-induced environmental change potentially affects that security. All the authors in *Contested Grounds* agree that security implies protection from threat, but they disagree about the precise nature of these threats and the subject(s) supposedly being secured. Based on Matthew's introductory survey of the literature and the arguments presented in subsequent chapters, it is possible to map the contending definitions along a continuum. As one moves from left to right, the definition becomes narrower. Nevertheless, with the exception of the "national security" definition on the far right, all broaden the concept of security from its traditional usage in the field of security studies.

All the contributors to *Contested Grounds* subscribe to anthropocentric definitions that focus on threats to human subjects at some level of analysis rather than the planet as a whole; none endorse the deep ecological position. Stern and Frédérick both embrace broad definitions that conceptualize security as protection against *all* significant threats (including

←				
definitional label	**"Deep Ecological Security"**	**"Comprehensive Security/ Human Security"**	**"National Environmental Security"**	**"National Security"**
relevant threats	all significant threats, including environmental ones, to sustainability	all significant threats, including environmental ones, to well-being and/or core values	all significant threats, including environmental ones, to well-being and/or core values	external and internal military threats, including environmental sources of these threats, to political stability and functional integrity
subject being secured	the planet itself	all human beings	nation-states	nation-states
***Contested Grounds* authors advocating definition**	None	Stern	Frédérick	Deudney

military, economic, environmental, and social ones), to well-being and/or core values, but differ on the subjects supposedly being secured. Stern calls for a "comprehensive" definition of security that treats all human beings at all levels of analysis as the relevant subjects, while Frédérick's more "realist" conceptualization focuses solely on threats to sovereign territorial nation-states. Deudney is critical of such a broad definition, and advocates a narrower, more traditional conceptualization of security that views it as the alleviation of military threats to nation-states.

These rival definitional approaches have both epistemological and normative implications. Epistemologically, the definition of "security" used specifies what the academic field called "security studies" is meant to study, just as terms like "American" and "political economy" identify and delimit the fields "American politics" and "international political economy." By suggesting that security studies includes the study of all significant threats to the well-being of the planet, people, or nation-states, broad definitions imply an incredible expansion of the field's current parameters. In contrast, the narrow definition endorsed by Deudney leaves current disciplinary firewalls intact. Security studies would remain the study of military affairs and the environmental security component of the field would focus on studying the ways in which human-induced environmental change affects military affairs between and within countries.



Deciding which definitional approach is best on epistemological grounds depends on one's view of the goal and role of theory in social science. It also depends on how useful one deems a particular definition to be for generating productive empirical and theoretical dialogue and comparison between scholars. Deudney, for example, argues that considering all threats to well-being as threats to security destroys the term's analytical utility. Instead of redefining security, overly broad conceptualizations *de*define it and make security studies the study of everything "bad." Deudney's criticism implies that security studies as a field would be better served by limiting environmental security work to research on the environment-violent conflict nexus. Of course, other intersections between the environment and well-being should still be studied, but Deudney's argument implies that this work should be left to environmentally conscious scholars in economics, sociology, anthropology, history, and other fields better equipped to explore non-military aspects of life. Thus, adjudicating between the broad and narrow definitions of security involves weighing the possible benefits to knowledge gained by expanding the notion of security, and thereby collapsing the disciplinary boundaries between security studies and numerous other natural and social science fields, against the risk that such expansion will gain no unique insights and make security studies incoherent. Unfortunately, the epistemological concerns raised by Deudney are largely ignored by the proponents of a broader (re)conceptualization of security.

One suspects that other authors confront the epistemological implications of their definitional approaches because they have a different agenda, one driven more by normative concerns than disciplinary ones. Proponents of broadening the definition of security seek to use the connection between "environment" and "security" as a rhetorical device to elevate the perceived importance of environmental degradation to policymakers and the public. Implicit in Frédérick's chapter, and explicit in Stern's chapter, is the desire to transform the environment from an issue of "low politics" to one of "high politics" by tying it to security. By raising the perceived stakes, they hope to mobilize support for the kinds of tough measures required to prevent eminent environmental crises.

Both Dalby and Deudney are highly suspicious of this rhetorical move. In advancing what he calls the "Southern" critique, Dalby argues that the term security implies protection from an *external* threat, in this case emanating from environmental degradation. This externalization of environmental threats shifts blame for global environmental problems to developing countries (the South), and, in Dalby's view, is counterproductive for several reasons. First, it masks the historical responsibility and contemporary involvement of rich Northern countries in the patterns of underdevelopment and resource exploitation prevalent in the South. Second, externalization diverts focus away from internal overconsumption of natural resources by the North, which, according to Dalby, lies at the heart of most global environmental problems. Third, Dalby notes that the environmental security discourse is dominated and deployed by Northern experts who view external threats as something to be managed and contained. As a result, the rubric of environmental security may only serve to reinforce the North's tendency to control the global environment and the flow of natural resources at the expense of the interests of Southern nations. Northern "solutions" to these Southern threats may call for developing countries to reduce resource consumption, adopt draconian population measures, and drastically change economic activities, all policies that potentially represent greater threats to Southern security, at least in the short term, than environmental degradation does.

A further criticism advanced by Deudney might be labeled the "nationalism" critique. Deudney contends that conceptualizing the environment as a *national* security issue perpetuates the kind of "us-versus-them," zero-sum thinking that leads to conflict, not cooperation. It also entrenches notions of sovereignty and the belief that national solutions to environmental problems are possible. That mode of thought, in Deudney's opinion, is at odds with the type of globalist, non-nationalistic mindset that is ultimately required to address the most pressing environmental challenges.

The "Southern" and "nationalism" critiques are powerful ones. Dalby and Deudney should be applauded for raising issues and perspectives that are often left out of state-centric, Northern-biased environmental security discussions. Nevertheless, the dangers of externalization and non-

cooperation may not be inherent to environmental security discourse. Stern's conceptualization, for example, may skirt these criticisms by defining the appropriate subjects to be secured as all human beings rather than nation-states. This strategy seems to avoid the North-South and cooperation dilemmas involved in attaching the environment to (Northern) national security concerns. In practice, however, Stern's conceptualization is unlikely to be widely adopted by the decisionmakers responsible for addressing environmental concerns. As Frédérick notes, nation-states are likely to remain the central, although certainly not the only, actors on the international stage for the foreseeable future. If nation-states are the central actors in international politics, environmental interests, like most other major policy issues, are likely to be defined in terms of national interests whether or not the environment is tied to security. Moreover, as Dalby himself acknowledges, Northern hegemony is not likely to be dislodged anytime soon. Ultimately, the current "reality" of international politics cuts against arguments advanced by both sides. The unlikely prospects for significant transformation away from the current Northern dominated state-centric system not only makes Stern's definition somewhat utopian, but also makes the North-South and cooperation dilemmas pointed to by Dalby and Deudney inevitable regardless of how scholars deploy the term "environmental security."

Furthermore, limiting the dangers of externalization and non-cooperation could conceivably be done even with a conception of security that both includes an environmental component and takes the nation-state as its main subject. As long as scholars and practitioners recognize that environmental degradation is caused by numerous factors (e.g., overconsumption and exploitation by the North; population growth, poverty, and inequality in the South), justice and equity concerns need not be ignored even if environmental security is the framework for discussion, the nation-state is the unit of analysis, and Northerners do most of the investigating. In terms of the cooperation problems alluded to by Deudney, Frédérick makes the valid point that cooperation is still possible between states. After all, neoliberal institutionalism is an entire school of thought in the field of international relations devoted to the study of cooperation between self-interested nation-states. As regional and international agreements related to such diverse environmental issues as acid rain, stratospheric ozone layer depletion, and access to transboundary water resources suggest, it is sometimes possible for states to avoid conflict over the environment even when the interests at stake are perceived to be national.

A final normative concern raised by Dalby, Deudney, and Deibert could be called the "militarization" critique. These authors note that achieving security has traditionally been the duty and obligation of national armed forces. Thus, they express a concern that connecting the environment to security will logically call for increased military involvement in securing the environment, something they see as a dangerous undertaking.

Beyond the definitional conundrum and its abstract theoretical and normative implications, a number of the contributors to *Contested Grounds* focus on the more narrow empirical question of whether environmental degradation and resource scarcity represent potential sources of political instability and violent conflict. Throughout the 1990s, Homer-Dixon has been at the forefront of this research. In his contribution to *Contested Grounds*, Homer-Dixon reviews three hypotheses linking environmental scarcity to violence: (1) environmental scarcity causes *simple scarcity conflicts* (resource wars) between states; (2) environmental scarcity causes *group identity conflicts* arising from environmentally induced population displacements; (3) environmental scarcity causes *deprivation conflicts* arising from environmentally induced economic deprivation and disruption of key social institutions. Based largely on the findings of the Project on Environmental Change and Acute Conflict he directed, Homer-Dixon concludes that there is little empirical support for the first hypothesis but considerably more evidence suggesting the viability of the latter two.

The chapters by Lowi and Goldstone, originally written for Homer-Dixon's project, support these conclusions. Lowi examines tensions between Arabs and Israelis over the freshwater resources of the Jordan River Basin. Lowi argues that Israel sees access to water as vital to the country's national survival, but that issues of high politics, namely the future political status of Israel's occupied territories, are more important than environmental concerns in shaping the pattern of conflict and cooperation in the Middle East. Thus, Lowi's study offers little support for the simple scarcity hypothesis. Goldstone's chapter examines the last six hundred years of Chinese history, and concludes that population pressures and the scarcity of arable land have consistently contributed to political instability and civil war. Based on these findings, Goldstone warns that the future stability and unity of China could be challenged by the continuation of current demographic and environmental trends.

To some degree, these conclusions are also echoed in Deudney's critical review essay. Deudney persuasively argues that the robust nature of the international trading system, which usually makes it cheaper to trade for resources than fight for them, the high costs of war imposed by modern weaponry, and the existence of peaceful alternatives provided by numerous international institutions and NGOs all combine to make resource wars between countries unlikely. At the same time, however, Deudney concedes that deprivation conflicts are plausible (he does not address the population displacement scenario). His main problems with the deprivation hypothesis are methodological, not empirical. Although he offers no evidence himself, Deudney is critical of existing studies because they fail to examine the entire range of possible cases of conflict, fail to control for alternative explanations, and ignore instances of peace and cooperation in the context of environmental scarcity.

The discussion of the environment-violent conflict connection in *Contested Grounds* suffers from a number of theoretical and empirical limitations. Theoretically, the arguments advanced in the volume are somewhat underspecified. There is an emerging consensus in the environmental security community that environmental degradation and resource scarcity are neither universally necessary nor wholly sufficient causes of violent conflict.

Environmental pressures are not necessary causes of conflict because there are many examples of international and civil wars caused by non-environmental variables; they are not wholly sufficient causes because not all countries experiencing serious environmental degradation and resource scarcities go to war or descend into civil strife. Rather, as the chapters by Homer-Dixon, Lowi, and Goldstone make clear, the likelihood of environmentally induced violent conflict varies considerably depending on the social and political context. Thus, the environment is a conjunctural variable that "causes" conflict only in combination with other intervening variables. Unfortunately, the contributors to *Contested Grounds* fail to clearly specify which intervening variables are most important. This omission makes the theoretical claims very difficult to evaluate. If every contextual variable is a potentially important intervening variable, then every case in which environmental pressures positively correlate with international or civil violence automatically suggests a causal connection when, in reality, there may not be one.

The chapters devoted to environmentally induced violence also have empirical weaknesses. In particular, they fail to survey or examine the growing body of empirical studies completed in recent years. Homer-Dixon's chapter, for example, stems from a research project completed in 1993. Since then, several other major research endeavors have been conducted, including work by groups at the Swiss Peace Foundation, the International Peace Research Institute in Oslo, Yale University, Columbia University, and two subsequent University of Toronto projects led again by Homer-Dixon. Deudney's chapter also ignores this recent work, much of which addresses his methodological concerns. The empirical chapters by Lowi and Goldstone suffer in a different respect from not being up-to-date. Despite the fact that the status of the Middle East peace process and political conditions in post-Deng China have both changed dramatically in the recent years, neither chapter contains a single reference since 1995. One suspects that these empirical oversights have more to do with how long it took *Contested Grounds* to go to press (the volume began as a conference in Vancouver in 1993) than with any intentional neglect on the part of the authors. Nevertheless, these shortcomings cut somewhat against the volume's ambitions to represent the state of the art in this area of research.

Security as an Independent Variable

The smallest portion of *Contested Grounds* reverses the causal arrow and focuses on the ways in which security policies and organizations affect the quality of the environment. In his contribution, Butts, a professor at the U.S. Army War College, advocates increasing U.S. military involvement in environmental missions at home and abroad. Environmental threats have been a component of the National Security Strategy of the United States, the annual executive statement of America's vital strategic interests, since the Bush administration. Therefore, Butts argues, if it is the role of the Department of Defense (DoD), intelligence agencies, and other traditional military organizations to guarantee national security, then military involvement in addressing environmental threats should be expected. Indeed, Butts not only sees an expanding military role as inevitable, he welcomes it. Butts suggests that the DoD has made great strides in reducing pollution and waste emanating from military facilities in the United States, and has vast engineering and waste disposal experience that is already being used to address domestic environmental concerns such as coastal species protection. Internationally, Butts contends that the U.S. military has unique technical and operational capabilities, and an extensive global network of military-to-military connections, all of which can be used to integrate, harmonize, monitor, and enforce efforts to protect the global environment. Butts is particularly optimistic about the environmental benefits of foreign military assistance. He argues that military organizations in developing countries enjoy several advantages over other governmental and nongovernmental groups, including better organization, better training, greater reach, better transportation resources, and greater technological sophistication. Thus, by using military-to-military ties and security assistance, the U.S. military can productively provide training and resources to the armed forces of developing countries and encourage them to clean up industrial waste and combat deforestation, poaching, overfishing, and other unsustainable development practices. In short, foreign military assistance is viewed as an effective way to defuse environmental flashpoints. It also helps maintain close ties between the United States and foreign military establishments, thereby providing the side-benefit of facilitating DoD power projection when instability in developing countries threatens American interests.

Other authors in *Contested Grounds* are far less sanguine about the prospect of militarizing environmental protection. Deibert's excellent empirical chapter analyzes the utility of using U.S. military satellites to provide data on environmental degradation and improve responses to natural disasters. This case is interesting and important. Military satellites enjoy certain purely technical advantages compared to commercial satellites, such as better image resolution and processing speed, in addition to huge archives of data. Consequently, if there were any instance in which a greater military role in environmental rescue would be warranted, it would appear to be the case of satellites. In social science parlance, satellites represent an "easy" case for the proponents of military involvement and a "hard" case for opponents. Despite their apparent usefulness, however, Deibert concludes that data from the National Reconnaissance Office (NRO), the agency created to coordinate the satellite programs of U.S. military and intelligence organizations, has only questionable practical utility for protecting the environment. The narrower field of vision captured by military satellites, for example, may offset the usefulness of better image resolution. Deibert also argues that much of the archived data is redundant with currently available commercial data and lacks the necessary image consistency and reliability. Moreover, the thick layers of secrecy and compartmentalization surrounding NRO data tends to smother declassification efforts. This culture of secrecy hinders proper access and analysis, creates sizable information gaps, and provides enormous potential for military manipulation of data access when other national security interests are deemed

more important than environmental concerns. Deudney makes a similar, more general claim when he argues that the very organizational culture and structure of armed forces make them unlikely saviors of the environment. Deudney contends that the secretive, hierarchical, and centralized nature of military organizations mean that they are maladapted to the kinds of open, egalitarian, and decentralized solutions often required to protect nature.

Beyond these practical concerns there are a number of normative ones. Deibert fears that the U.S. military will capitalize on new environmental missions to rationalize increased military spending and prevent defense conversion. Deudney worries that militarizing the environment will invite future armed interventions and conflicts designed to prevent other nations from despoiling nature or violating international environmental agreements. Dalby is particularly critical of Butts' assertion that armed forces in developing countries should be more involved in environmental protection. Dalby rightly notes that militaries throughout the developing world have a very poor record of acting in the interests of their national populations. Instead, they are often agents of violence and repression. Thus, greater military involvement may represent a greater threat to the security of marginalized individuals than environmental degradation does. Finally, Dalby and Deibert both express the concern that military co-optation of the environment will trade-off with beneficial activities by private actors. Dalby argues that coercive, top-down military measures may invite conflicts with local groups and preclude the kinds of voluntary, community-based actions required to promote sustainable development and reduce poverty. Similarly, Deibert warns that greater military involvement in environmental monitoring will crowd out the production and use of commercial satellites.

Critics of the military raise important concerns, none of which are explicitly rebutted by Butts. In fairness, however, Butts does provide numerous examples of environmental benefits stemming from military activities. In contrast, neither Dalby nor Deudney provide much empirical support for their objections, and Deibert's analysis does not extend beyond the use of satellites. Furthermore, as Butts notes, the U.S. DoD, NATO, and other European security organizations have already engaged in environmental activities, and the worst fears voiced by Dalby, Deudney, and Deibert have not yet materialized. In short, the jury is still out. Since military involvement in environmental missions is a case in progress, more empirical work is needed before passing final judgement.

Theory and Evidence

In his introduction, Matthew states that the twin goals of *Contested Grounds* are "to introduce students and practitioners to the theoretical debate and empirical evidence available." Overall, the volume is much better as a theoretical survey than an empirical one. In part this stems from a conscious choice to emphasize theoretical breadth over empirical depth. In part it stems from the long gap between the time the volume was conceived and most of the chapters written, and the time it actually went to press. This being said, no single work published thus far achieves what *Contested Grounds* does. The excellent collection of essays simultaneously identifies the key controversies related to environmental security and moves the debate forward. For this reason, the book is an invaluable introduction to the field and should serve as a wonderful teaching tool.

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Environment, Scarcity and Conflict: A Study of Malthusian Concerns

Leif Ohlsson
Department of Peace and Development Research,
Göteburg University, 1999. 272 pp.

Reviewed by Simon Dalby

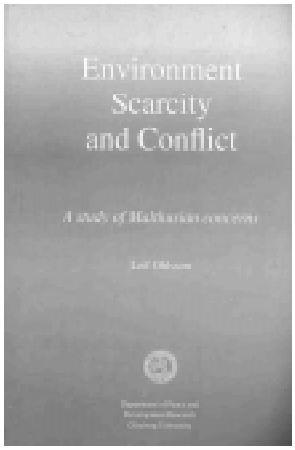
The academic and policy discussions of environment and conflict have, it seems, come of age. Or rather they have been going on long enough now to inspire doctoral dissertations delving into the controversies and challenging the methodological assumptions of the first practitioners. Ohlsson's dissertation, which following Swedish practice is published as a scholarly monograph, does both in detail, and does so with considerable intellectual panache in places. It both reviews the literature comprehensively and tackles the methodological debates in detail. Its contribution is to both stretch the bounds of the analysis and add some useful case study material to the research.

The introduction places the post-Cold War debate about environment and scarcity in the long shadow of Malthusian concerns stretching back two centuries. It also shows how this links to the post-Cold War debate about reformulating security. The author follows the line of argument in Thomas Homer-Dixon's research that focusing explicitly on conflict may be more useful given the highly contested nature of the term "security." The second chapter reviews recent research work on environmental scarcity and conflict and particularly the research of the Toronto group led by Thomas Homer-Dixon, the work of the Swiss team under the auspices of ENCOP, and the Scandinavian work lead by the Peace Research Institute in Oslo. One of the many merits of this dissertation is the succinct and accessible style of the writing in this chapter, which provides a synopsis of the material in the field that will be of use to researchers and policymakers wanting an overview of the various approaches.

The third chapter focuses on the methodological matters that have spurred an ongoing debate, and at times, as the pages of earlier editions of this *Report* attest, a pointed argument about

what should be researched, how, and why. The detailed discussions about causality and explanation are beyond the scope of this review, but this chapter offers a useful overview of the debate. For Ohlsson this debate leads to his first case study chapter, a detailed rethinking of the role of environmental scarcity in the genocide in Rwanda in 1994. In particular he offers a critique of the methodology that Valerie Percival and Thomas Homer-Dixon used in their analysis of this theme, although their conclusion that environmental scarcity was a minor part in what transpired is not seriously challenged.[1]

Ohlsson extends the discussion by introducing notions of evil, human agency and political responsibility to avoid the difficulties of determinism in the research that focuses on environmental scarcity as a casual variable. There is an obvious connection here to other analyses of Nazi genocide, and Ohlsson focuses on the specific actions of functionaries in the state apparatus in obeying orders that led to the massacres in particular places. Ohlsson wisely makes the important point that Rwanda was not a "state failure," but a deliberate planned massacre by organized state institutions. The elites only miscalculated in that they assumed that they could hold off the insurgent Rwandan Patriotic Front forces in the north while they carried out their "final solution."



The fifth chapter extends his analysis to follow up another theme in Thomas Homer-Dixon's work, the question of social ingenuity in the face of environmental stress. Ohlsson formulates matters in terms of "social resource scarcity" extending the terminology in a way loosely consistent with Malthusian principles and with Homer-Dixon's framework. While determinism is inadequate in Ohlsson's thinking, the assumption that all things are possible in a crisis is also unacceptable. The innovation here is to try linking social resources and environmental resources in terms of sustainability, and then to link the concerns of development workers with social institutions to resource managers' preoccupations with natural phenomena.

The sixth chapter then applies this conceptualization of social resource scarcity to the discussions of water conflicts and questions of increasing shortages of fresh water in many parts of the planet. The Nile basin is discussed once again as an example of potential conflict, and in particular, as a way of developing an index of "social water stress" that can link scarcities together in a useful manner. Vulnerability is linked to the United Nations Human Development Index to attempt to see in which states' water vulnerability is related to a lack of institutional adaptability, and hence potential conflict; and whether the attempts to adapt may not trigger second-order conflicts caused precisely by attempts at adaptation.

Ohlsson finishes his argument with a concluding chapter that raises political considerations about how to react to the Malthusian difficulties that substantial parts of the world face. Among other arguments, he cautions against a realpolitik response to the challenges of sustainable development, suggesting that this may lead to the abandonment of efforts to help in places not seen as of vital national interests to Northern states. He also pointedly notes that change is the human condition, and that while no doubt numerous mistakes have already been made that will cost future generations heavily, the future is not hopeless but a matter for political discussion and policy engagement.

In his analysis of Rwanda and the stress on the importance of political structures for dealing with resources questions, Ohlsson tries to rescue the discussion of Malthusian themes from the determinist pessimism that often overtakes analyses of likely future situations. However, in focusing on the literature in political science he does miss out on the potentially useful contributions of other scholarly traditions. These include the longstanding contributions of geographers to resource management institutions, and more recently the feminist critiques of the limits of development discourse in dealing with the social ingenuity and coping skills of informal social networks in many non-Western societies. Questions of cultural innovation and adaptability would also clearly benefit from analysis drawn from history and anthropology, not to mention the literature on disasters and social responses to them, which is nearly entirely ignored by contemporary discussions of environmental scarcity. If the scarcity and conflict literature is to make further progress, the case can easily be made for greater disciplinary breadth in addressing important matters of conflict and social change in the specific contexts where these are especially pressing.

Despite these limitations to this research effort, this reviewer can only concur with the importance Ohlsson places on thinking carefully about the politics of a future sustainability and what they entail and for whom. We are all going to live in the future, and questions about what is worth sustaining where and by whom in the face of rapid social change and huge inequities among and between human populations on a constrained planet are only beginning to be seriously discussed. Focusing on constraints and limits without falling into determinist reasoning and alarmist analysis allows for thoughtful discussion of the institutional and political innovations needed for the future. On all these themes, Ohlsson's study makes a useful and very readable contribution.

Simon Dalby is Associate Professor of Geography at Carleton University in Ottawa.

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[1] Thomas Homer-Dixon and Valerie Percival. *Environmental Scarcity and Violent Conflict*. Toronto: University of Toronto, 1996.

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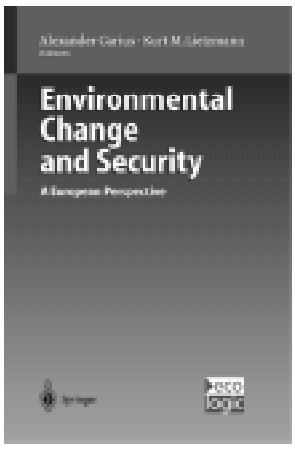
Environmental Change and Security: A European Perspective

Alexander Carius and Kurt M. Lietzmann, Editors

Berlin: Springer, 1999. 345 pp.

Reviewed by Stacy D. VanDeveer

Environmental Change and Security is a worthy addition to the growing literature on the linkages between security and environmental degradation and scarcity. These debates, often heavily influenced by North American and Nordic analysts, are well documented, summarized, analyzed, and advanced in the Carius and Lietzmann collection. The volume includes authors from Austria, Germany and Switzerland (the English edition is translated from German), but also includes several authors whose works are familiar to readers of the literature in English. The book's 17 chapters are organized into five parts that focus discussions on the conceptual and theoretical linkages among environment and security, characterization and typologies of environmental conflict, modeling, foreign and security policy, and environmental and development policy.



The first five chapters cover many of the debates in the environment-security literature in recent years: conceptual definition and clarity, case selection, data availability and quality, militarization of the environment, and the compatibility of the various lines of research within the "environment and security" research agenda. In the end, most authors agree that the "environmental cause of violent conflict" hypothesis has not been demonstrated by the overall research program. However, they also agree that environmental quality often plays an important contextual role in potential or existing conflict situations. One unfortunate aspect is that these initial chapters are sometimes repetitive on several points of debate in the literature.

Carius and Kerstin Imbusch organize the links between environmental change and security into four dimensions:

> "(1) the impacts of military activities upon the natural environment in times of peace and of conflict; (2) the direct and indirect influence of a) environmental changes upon local, national, regional and international security but also b) their function of delivering causes for cooperation and thus building confidence; (3) the impacts of environmental changes upon social conflicts and their indirect consequences for security and; finally (4) the instrumentation of deliberate environmental changes as a means of warfare."

The authors map the environment and security terrain quite well. However, they are too quick to dismiss concerns about the potential for militarization of environmental issues, and to assert that debates over the environmental impacts of military activities are resolved. For example, the U.S. military continues to oppose international climate change instruments, and most major international environmental protection treaties exempt military activities altogether. These issues, then, are not settled, contrary to the editors' assertions.

Perhaps the most notable contribution of the volume is its discussions of various typologies of the links between conflict and the environment in conjunction with attempts to unpack the many different phenomena denoted by the terms "environment" and "conflict." Günther Bachler's summary of findings from his extensive empirical research on environmentally-induced conflict is particularly interesting. Furthermore, this collection pushes environment and conflict research more in the direction of connections to development and environmental protection, rather than continuing to focus on links with more traditional military, security and violence issues. These attempts to explore the complex interaction of security, conflict, environment and development offer chapter authors numerous opportunities to discuss policy implications. For example, Bernd Wulffen discusses prospects for integrating environment and security concerns into the Rio process and Volker Quante focuses a similar analysis vis-à-vis NATO. Other chapters cover the existing and potential connections between environment and security debates and international development cooperation, nongovernmental organizations and the United Nations. In short, those interested in the politics of linking environmental degradation and scarcity concerns to security across multiple international organizations and issue areas will find much of interest in this new book.

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Security: A New Framework for Analysis

Barry Buzan, Ole Wæver and Jaap de Wilde

Boulder, CO: Lynne Rienner Publishers, 1998. 239 pp.

Reviewed by Nina Græger

Security is the latest book published by the so-called Copenhagen School of security studies, a group of scholars at the Conflict and Peace Research Institute, COPRI. This book represents a refined version of earlier works by Barry Buzan, Ole Wæver, Jaap de Wilde and other co-authors over the past decade.

With this book, Buzan et al. continue to pursue a wider security agenda without excluding traditional security studies: "Indeed, we hope it will largely lay to rest the rather scholastic argument between wideners and traditionalists" (p. 195), they

claim. The book starts out by presenting a conceptual apparatus, a method for distinguishing security issues from merely political ones. The following five chapters discuss five different sectors of security, while the last chapter aims at synthesizing these sectors.

The authors solve the problem of extending the security concept beyond its analytical usefulness by employing the concept of "securitization." Securitization results from what the Copenhagen group calls a "speech act," the practice of referring to the issue in security discourse. To succeed, a speech act must follow the security form and the grammar of security, and be made by an actor who holds a position of authority. For example, by declaring and later reaffirming the activation orders for air operations against The Former Republic of Yugoslavia unless the atrocities against the Kosovar Albanians came to an end, NATO Secretary General Javier Solana contributed to the securitisation of human rights in the Kosovo conflict.

Buzan et al. undertake a sectoral approach, which divides security into military, political, economic, societal and environmental sectors. The authors see sectors as "distinctive arenas of discourse in which a variety of different values…can be the focus of power struggles" (p. 196). The fruitfulness of this sectoral approach is questionable because security issues tend to cut across or involve several sectors at the same time. The Copenhagen group partly succeeds in solving the problem by stressing that the starting point for any research based on this framework should be to identify processes of securitization as a social practice and not to define security problems according to these five categories independent of the empirical dynamics.

One important value added by the Copenhagen School is the introduction of several new securitizing agents or actors. In the traditional security discourse, the securitizing actors/agents are state representatives. In established states, that is, in coherent states, who may speak security on behalf of the state is defined according to fairly clear rules. In less coherent states, however, who represents the state is not obvious. The alleged state representative(s) may also change over time. Securitizing actors are those who can legitimately speak security—form a speech act—on behalf of others, such as governments or the United Nations. Securitizing actors can securitize an issue, making something into a security concern.

Another valuable contribution the Copenhagen Group refined in *Security* is the introduction of new referent objects of security. Referent objects are defined as an answer to the question of whose security is threatened. Possible referent objects are states (military or political security); large-scale collective identities, which can function independently of the state, such as nations and religions (societal security); companies and the national economy (economic security); or the biosphere and particular species (environmental security). In *Security*, the authors introduce a broader spectrum of referent objects to include the liberal economic order and universal principles (e.g. human rights).

The semantic approach outlined by the Copenhagen group, where the discourse constitutes security, presupposes access to a public sphere and the existence of an audience. However, these conditions are not always present. Furthermore, different public spheres may imply that some security problems are excluded. Security policy requires channels and/or means for formulating and articulating such a policy. However, a group may have a security problem but no framework for security policy formulation and adoption, such as is the case for the Kosovar Albanians in the former Yugoslavia.

This point is related to another weakness of the book: a lack of empirical focus. Buzan, et al. provide a theoretical framework for analysis, but as opposed to their earlier works, take little interest in empirical realities. One of the roots of the Copenhagen School is the turbulent European security dynamic, especially after the Cold War. *Security* separates the empirical and conceptual dimensions, allegedly to approach the general domain of security detached from the European context. Although understandable and reflected in the title of the book, this perspective excludes the important implications. To make priorities—give some risks priority over others—is at the core of security policy and therefore a precondition for security analysis.

Security represents an explicit theoretical move from a particular Euro-American tradition of international relations towards a more social constructivist approach to security. Briefly, this move implies that security threats, security units, referent objects and security agents may fluctuate. According to this approach, security is being socially constructed through speech acts, often securitising non-security issues. For instance, at some point the protection of human rights in Kosovo was transformed from a humanitarian concern into a security issue, and therefore placed within the realm of political and military decision-makers.

Security provides a richer and more sophisticated analytical framework for security analysis than the politico-military focused security perspective that, to a great extent, still prevails in security studies. The book is a good point of departure for a cultural-historical interpretation of the speech act structure, which may contribute to pushing the Copenhagen School further without breaking with its own conceptual approach.

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Water and Population Dynamics: Case Studies and Policy Implications

Alex de Sherbinin and Victoria Dompka, Eds.

World Conservation Union (IUCN), American Association for the Advancement of Science (AAAS), 1998. 322 pp.

Reviewed by Leif Ohlsson

Having read a "first" book on water scarcity (along the lines of, for example, Sandra Postel's *Last Oasis*), the interested reader will find it very difficult to get a book on the next level of complexity. All too often one will plow through a number

of similar basic books, often referring to each other, leaving one with the impression that there is nothing new in the field. Or, one will attempt to take on very specialized hydrological surveys and policy reviews, leading to a distinct feeling of never mastering the field.

Here is a book that will fill the crucial need for a "second" book on the social consequences of water scarcity. It will leave the reader with a much enhanced understanding of both the hydrological complexities and the social challenges stemming from the need to mobilize scarce water resources. At the same time, the volume is completely comprehensible to the non-expert.

The book is the outcome of a collaborative effort of the United States Agency for International Development (USAID), International Union for the Conservation of Nature (IUCN) and Population Reference Bureau (PRB). Nine country teams (each including water resource specialists and a population specialist) contributed to the effort, resulting in a major effort to apply a common framework of population dynamics, hydrological limitations, and policy actions to a number of case studies from developing countries.

The book contains case studies from Tanzania, Guatemala, Jordan, Zambia, Bangladesh, Mali, Southern Africa (the Zambesi), India, Morocco, and Pakistan. Geographically, it covers Southern and East Africa, the Middle East, Central America and Southern Asia. Substantively, it covers the problems of rainfed agriculture, irrigation by groundwater abstraction, shared rivers, and drinking water in rural and urban areas. In addition, the volume includes an overview of the principles of water management, an introduction by IUCN editor Alex de Sherbinin, and a foreword by internationally renowned hydrologist Malin Falkenmark.

The strength of the case studies lies in three factors: the common framework, imposed in an exemplary way by the authors; the expertise of the case-study authors, as demonstrated by their rendering of research projects focused on a specific region within each country; and the way the specific regional problem is placed in the context of water and development challenges on the country level.

The reader thus gets the best of three worlds: examples of water problems encountered in different world regions, valuable country overviews of both population dynamics and hydrological limitations, and a very concrete understanding of how these problems translate into community-level development problems and challenges to be resolved by policy efforts.

The Value of Case Studies

Each of the three aspects—hydrological limitations, population dynamics, and policy efforts—are there in every case study, and they are given reasonably equal space. On the issue of hydrological limitations, highlights with new information cover the long and the short rains in Eastern and Central Africa, the specific geological problems of Central America, the vastly different preconditions for agriculture between distinctly different zones within single countries (such as, for example, Mali and Jordan), the consequences of urban water demands, the effect of hydropower dams on downstream agriculture in Zambia, the way the monsoon seasons govern life in Southern Asia, and the upstream-downstream problem (generally only encountered in the literature on the issue of international rivers) within a single local system of irrigation canals in Pakistan.

Similarly, one gets a valuable overview of the dynamics of population pressures in each of the countries. The cases shed light on the implicit compound pressures produced by the inevitable population increases during the coming decades, the undeniably just demands for better lives, and the specific role of water in realizing those goals. The sum of these factors presents huge challenges to the policy innovation capability of societies.

Some of the ways people adapt to limitations imposed by water scarcity deserved to be highlighted more clearly in the summaries by the editors. As an example, it is quite clear that the authors were given the explicit task of assessing migratory pressures resulting from water scarcity. In fact, one of the main results that may be read from the case studies is that migration is one of the most important determinants of population growth in villages, between villages, and in towns. It is quite evident from several case studies that people tend to migrate within (and sometimes even between) countries following water availability. Some authors attempt to trace a link between increased availability of potable water and migration to (and between) urban areas. For example, the population density in Tanzania appears much more evenly distributed if it is calculated per amount of water transpired through crops, than if it is calculated per square kilometer.

Another oft-repeated statement in a number of case-studies is that population increases in rural areas are not as large as they would have been, had there not been significant migration to cities. These conclusions are recognized by the editors in their introduction, yet the potential social and water management implications (both positive and negative) are not discussed as important outcomes of the book, which seems a missed opportunity.

One of the most valuable contributions of the volume stems from the discussion of the difficulties of formulating and carrying out appropriate policy responses to deal with the pressures resulting from population dynamics and water scarcity. One gets a very vivid picture of the enormous difficulties involved, as well as an admiration for the efforts undertaken by countless anonymous administrators. The main value added is an enhanced understanding of the difficulties encountered when attempting to carry out what "rationally" (from the point of view of hydrological concerns and the state) appears to be the "correct" policy. These efforts must be conducted in a context of existing social, economic, and (not least) cultural preconditions on the community level.

The final case study from Pakistan is almost epic in its rendering of how the people of six small villages at the far end of an irrigation system were marginalized by more powerful land-owners at the head of the system. The increased economic and social power clearly had come as a result of the upstream

opportunity to capture illegally a larger amount of irrigation water for producing more valuable crops. In the end, three of the villages were left totally empty as a result of forced out-migration. Two of them remained half-empty as canals (important for agriculture and for drinking) ran dry. Only in the last village did people hang on. Those forced to migrate had to sell their land to destructive brick-kiln works, in turn polluting the remaining water. Women, culturally forbidden and afraid to leave their villages alone, were often the only wage earners and had to fetch water twice a day from as far as ten kilometers away.

In the end, the plight of the now dispersed villagers was taken to a human rights court. They won a judgment that guaranteed a minimum amount of water flow, sufficient for them to return and try to rebuild their lives.

Questions Not Raised

It is, of course, not a coincidence that the case study chosen to end the book is a success story of sorts. In a similar vein, the discussion of policy efforts bears a stamp of forced optimism. By common agreement, all of the authors try to incorporate what is "known" to be right and good in the field: population stabilization is vital, as is community involvement; access to water is a human rights issue; environmental conservation also meets human needs; a multidisciplinary approach is beneficial; nonstructural (small-scale) solutions can be effective; water management institutions can avert conflicts over water resources; urban population growth affects demand for water; and public education is necessary.

Yet, sometimes the enormity of the challenge to implement what is known to be right and good shines through rather blatantly. If the doubling time of population growth in the Petén region of Guatemala, due to a combination of natural growth and in-migration, is at present 12 years, and the health situation for people suffering from intestinal infections and respiratory illnesses is such that the proportions of coffins made for children compared to adults is five to one, the picture painted should be one of an ongoing catastrophy, not a management problem.

If the population of Jordan has increased more than seven-fold in the last fifty years, it is a great achievement that the Azraq oasis (depleted by the water needs of Amman and agriculture) has been restored by pumping from other aquifers. But the pressure on water resources from a population with a present doubling time of some 20 years is still stupendous. The reader rather desperately seeks some reflections, in addition to a mere confirmation of this fact, on the nature of the policy efforts required to deal with these challenges.

In order to get a handle on the character of these challenges, a reading of the cases through two complementary conceptual frameworks—those of *environmental scarcity* and *social resource scarcity*, respectively—is helpful.

Two Alternative Readings

A reading of the cases through the conceptual framework of "environmental scarcity" provides increased understanding of the forces at work behind a perceived scarcity of water. Environmental scarcity should be understood as the outcome of three large processes of change: i) environmental impacts; ii) population increase; and iii) unequal social distribution of resources, also termed "structural scarcity."

The concept is proposed by Thomas Homer-Dixon of the University of Toronto, whose work on the link between environmental scarcity and violent conflict has been much discussed in previous issues of the *Environmental Change and Security Project Report*. Here I am simply using the concept heuristically.[1]

As an example, the case study of Guatemala renders an almost perfect description of how structural scarcity (unequal resource access) is linked to the state of war and general violence that has prevailed there over the last 40 years. It is noted that one result of changing ownership rights ("resource capture" by more powerful segments, one cause of structural scarcity) has been large-scale migration towards urban areas and agriculturally marginal zones prone to severe soil erosion (constituting what in Homer-Dixon's terms would be "ecological marginalization," a consequence of structural scarcity). In Zambia, hydropower dams and the Nakambala Sugar Estate have effected a similar resource capture, blocking water demands from local populations and increasing land degradation, leading to ecological marginalization.

In the state of Karnataka, India, the availability of water has declined to a much greater extent than other resources for the small and marginal farmer. The decline results from the de facto ownership of water by large farmers with private boreholes. The collapse of community water management systems has led to the silting of water tanks and the decline in their use. The overall effect of this unequal social resource distribution has been that land area used for irrigated coconut plantations (owned by the wealthy elite) has doubled, resulting in a reduction of irrigated land for annual crops to a mere 15 percent of the amount under irrigation some 25 years ago, a good illustration of structural scarcity resulting from resource capture, and the consequent ecological marginalization.

Furthermore, many of the questions left hanging in the air almost beg to be addressed by a conceptual framework of what I elsewhere have suggested ought to be termed a *social resource scarcity*, that is, a scarcity of a particular kind of resource, namely the adaptive capacity of societies facing the challenge of managing natural resource scarcities. The concept builds on the so called "ingenuity gap" suggested by Homer-Dixon, but stresses the character of the adaptive capacity of societies as a distinct resource, critically prone to scarcity.[2]

An example from the book under review is the case study of Morocco. It differs markedly from the other cases, in that it both recognizes the difficulties ahead and tries to identify the factor missing in many discourses. Authors Abdelhadi Bennis and Houria Tazi Sadeq raise the crucial question:

> Will the population accept high annual costs for participation in investments that were decided without their consent…. Organizational initiatives rarely come from the population under the socioeconomic conditions that exist in rural areas. The government is forced to take the

> initiative, hoping the population will follow. On the one hand, there is the government's duty to initiate and maintain basic installations, and on the other hand there is the government's desire to transfer management, within an organized and democratic framework, to a local population that, unfortunately, is not ready to handle it (p. 278-9).

Issues raised here are the ability and legitimacy of the state to carry out the policy measures which are "known" to be right and good, and the very real likelihood that such measures cannot possibly be realized to the degree necessary, due to the opposition formed by a variety of local coinciding vested interests.

Such difficulties deserve to be the focal point of similar studies in the future. A great strength of this volume is that, in addition to the very real contribution in its own right, it has also opened the way and pointed at the need for such studies.

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[1] Thomas Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security* 19 (Summer 1994): 5-40; and *Environment, Scarcity and Violence*, Princeton University Press, 1999.

[2] Leif Ohlsson, *Environment, Scarcity, and Conflict: A study of Malthusian concerns*, Department of Peace and Development Research, University of Göteborg, Sweden 1999. Thomas Homer-Dixon, "The Ingenuity Gap: Can Poor Countries Adapt to Resource Scarcity?", *Population and Development Review* 3 (September 1995): 587-612.

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Resolving Environmental Conflict: Towards Sustainable Community Development

Chris Maser

Boca Raton, FL: St. Lucie Press, 1996. 200 pp.

Reviewed by Carlos F. Lascurain

The title of this book suggests that the main topic is about implementing policies or creating institutions, which can be used to resolve environmental conflicts or at least to confront them. However, on the contrary, Chris Maser writes with the main purpose of showing people that the key to resolving destructive environmental conflicts lies within ourselves. The idea of "us and the choices we make" is developed in the book using simple and understandable language. But more importantly, Maser uses a wide variety of examples, most of them drawn from his experience as a facilitator for the U.S. Department of the Interior, Bureau of Land Management and other U.S. governmental and nongovernmental organizations.

The book is divided into two main parts. The first one, entitled *Resolving Destructive Environmental Conflict*, deals exclusively with the definition and explanation of what he calls the seven "givens." Maser defines the givens as the basic elements that must be understood, accepted and acted on if a destructive environmental conflict is to be resolved. These seven givens, according to the author, are the mechanism by which transformative facilitation can be implemented. Following, a brief description of each one is presented.

The first given deals with the idea of *conflict is a choice*, which means we can choose peaceful ways of resolving differences as well as understanding that the peaceful way lies in the art of transformative facilitation, where differences are resolved through inner shifts in consciousness. The second given, *environmental principles: the need to know and the fear of knowing*, is concerned with the principles governing nature's dynamic balance. These principles are (1) the law of conservation; (2) the law of conservation of energy; and finally (3) the law of entropy. He also warns of the consequences of not taking them into consideration in our daily life. The third given, *the human equation* refers to the equality in love, trust, respect and environmental justice. In other words, environmental justice asserts that we owe something to other people, both those present and those yet unborn. The fourth given, *communication: the interpersonal element*, is focused on the ability to transfer experiences from one generation to another as well as from one situation to another. The fifth given, *the process is the decision*, is about the faith facilitators must have in order to achieve the outcome they seek. The sixth given, *conflict is a learning partnership*, is concerned with facilitating someone else's ability to reach his or her potential as a human being. In this process, both the facilitator and the combatants learn each other's capacity to expose their human values and their human dignity. The last given, *practicing transformative facilitation* focuses on democracy, compromise and the point of balance that resolves conflict, and on the importance of compassion and justice, which are essential in continuing the facilitation process. At the same time, in almost the whole first section he emphasizes our ability not only to make the right choices for our present environment but also for future generations.

The second part of the book, called *Beyond Destructive Conflict: Social/Environmental Sustainability*, is a separate proposal rather than a continuation of the first section. This section examines the notion of *sustainable community development*. Maser's idea of sustainable community development is a community-directed process of development that is based on six points. The first one is based on transcendent human values of love, respect, wonder, humility, and compassion. The second one is based on sharing, generated through communication, cooperation, and coordination. The third point is based on a capacity to understand and work with the flow of life as a fluid system, recognizing the significance of relationships. The fourth point is about patience in seeking to understand a fundamental issue rather than applying band-aid quick fixes to symptoms of a problem. The fifth point is based on consciously integrating the learning space into the working space within a continual cycle of theory, experimentation, action, and reflection. The last point is about a shared societal vision that is grounded in long-term sustainability, both culturally and environmentally. This is, according to Maser, the best type of

community for which to aim because it gives people the chance to employ the principles of democracy, aesthetics, utility, durability and sustainability in the planning process. He looks at this type of community interacting with local governments and local economic developments. Even though the author does not give any practical example of a sustainable community development, the book gives the right image of the community he is proposing.

The book will be of interest to those who focus on social change as well as social behavior, and also for those concerned with environmental ethics and a sense of environmental balance. Chris Maser's ideas of the "givens" are of special importance for those involved in the environment and facilitators in particular. But whatever our field of study, we must realize that we have to take into consideration that the theme addressed here is simply too important to ignore and that action must be taken sooner rather than later.

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Ecoviolence: Links Among Environment, Population, and Security

Thomas Homer-Dixon and Jessica Blitt, Editors

New York: Rowman & Littlefield Publishers, 1998. 238 pp.

Reviewed by Dean Caras

Ecoviolence: Links Among Environment, Population, and Security is the product of arguably the best-known research program in the field of environmental security and conflict. Researchers from the University of Toronto and the American Association for the Advancement of Science came together to study the links between "environmental scarcity" and violent or "acute" conflict. Their analysis and conclusions, compiled by the University of Toronto's Thomas Homer-Dixon and Jessica Blitt in this collected volume, provide a very readable and yet detailed research effort. This collection of cases, adapted for broad audiences and classroom use, precedes and accompanies lead researcher Homer-Dixon's 1999 single-authored book, *Environmental, Scarcity, and Violence [Editor's note: See review on pg. 93-94]*.

Three key questions guide the research effort: 1) Does environmental scarcity contribute to violence in developing countries?; 2) If it does, how does it contribute?; and 3) What are the critical methodological issues affecting this type of research? Homer-Dixon's Environment, Population, and Security Project (EPS) conducted in-depth case studies to investigate these questions and this volume includes five cases of civil violence: Chiapas, Gaza, South Africa, Pakistan, and Rwanda. *Ecoviolence* focuses on six major types of environmental change that may produce environmental scarcity through degradation or depletion of renewable resources: water degradation, land degradation, deforestation, a decline in fisheries, global warming, and stratospheric ozone depletion.

Homer-Dixon and Blitt utilize "environmental scarcity" as they are quick to point out that environmental change (supply-induced scarcity) is only one determinant of environmental scarcity. Environmental scarcity is also determined by increased demand for resources caused by population growth or increased per capita resource consumption (demand-induced scarcity). Environmental scarcity may also be determined by the unequal social distribution of resources (structural scarcity). Structural scarcity occurs when a resource is controlled by a small, usually elite, percentage of the population while the majority faces resource shortages. Commonly these three types of scarcities occur in combination (Homer-Dixon and Blitt, 5-7).

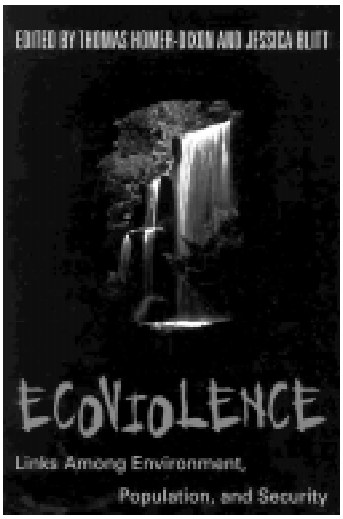
The EPS Project specifically concentrates on developing nations to investigate whether environmental scarcity contributes to violent conflict. People in poor countries are more dependent for their daily livelihood on local renewable resources and it is postulated that they are often unable to adapt to environmental scarcity due to inadequate human capital, weak markets, and corrupt governments. The following sections describe each case as viewed through the framework of *Ecoviolence*.

The Case of Chiapas, Mexico, *Philip Howard and Thomas Homer-Dixon*

In 1994, a revolutionary Zapatista movement, the Zapatista National Liberation Army (EZLN), challenged the ruling Partido Revolucionario Institucional (PRI) and brought world attention to the difficult conditions of the Chiapan peasants. *Ecoviolence* claims that three simultaneous factors brought about this insurgency by the Zapatistas. The three elements include "rising grievances among peasants caused largely by worsening environmental scarcity, a weakening of the Mexican corporatist state by rapid economic liberalization, and efforts by churches and activist peasant groups to change peasants' understandings of their predicament" (Howard and Homer-Dixon, 20).

Although there are only 7.6 million hectares of land in Chiapas from 1970 to 1990, the population doubled from 1,570,000 to 3,200,000. Migrations of poor farmers from other parts of Mexico have contributed to a 3.6 percent annual growth rate. This growth in population has contributed to the consumption of the forest and most of the potential arable land. Thus, the growing population on a limited land base causes what Homer-Dixon calls demand-induced scarcity. The arable land that does exist is unfairly distributed, resulting in structural scarcity. Most of the best land for raising cattle and coffee production is put to commercial use by the politically dominant wealthy elite. Homer-Dixon and Blitt identify this as "resource capture." "Resource capture occurs when powerful elites – partly in response to the pressures of population and resource depletion – shift in their favor the laws and property rights governing local resources, thereby concentrating ecologically valuable resources under their control" (Howard and Homer-Dixon, 39). The average land endowment for subsistence production is only

two hectares. Furthermore, the state's credit access and social spending programs are corrupt, according to the authors (Howard and Homer-Dixon, 26-39).



While demand-induced and structural scarcities may be the most severe problems, supply-induced scarcity further worsens the situation. Unsustainable agricultural practices, such as overgrazing and rapid deforestation, lead to the degradation of Chiapas's critical environmental resources. Most of the deforestation and soil erosion has taken place within the last twenty-five years. As a result of deforestation, many local communities face severe firewood shortages. These shortages force communities to travel into cloud forests where they continually exacerbate environmental stresses by endangering unique flora and fauna, thus creating a condition Homer-Dixon calls "ecological marginalization." "Ecological marginalization occurs when population growth and severely unequal resource distribution in resource-rich regions force poor people to migrate to ecologically fragile areas; as the population density of these migrants increase, they damage local environmental resources, which deepens their poverty" (Howard and Homer-Dixon, 39).

Demand-induced, supply-induced, and structural scarcities combine to aggravate economic hardships and the grievances of the Chiapan peasants. Homer-Dixon and Blitt illustrate through statistical tables, historical accounts, and diagrams how they view these scarcities producing the EZLN insurgency.

The Case of Gaza, *Kimberly Kelly and Thomas Homer-Dixon*

All too often, flashes of violent, fanatical Islamic fundamentalism in the Gaza strip are reported in the news. *Ecoviolence* attempts to clarify these acts of violence by examining their underlying roots. While Homer-Dixon points out that studies of this region are hindered by lack of good data and often contain complex links of scarcity and conflict, there is no question that the Middle East's water scarcity causes deteriorating socioeconomic conditions. In turn, *Ecoviolence* claims, these conditions exacerbate ongoing tensions and grievances between Israelis and Palestinians.

Palestinians appear to be the victims of structural scarcity as Israelis enforce discriminatory water policies. For instance, Military Order 158 prohibits the Arab population from drilling new wells. In some cases, there have been orders to limit Palestinian water consumption by uprooting thousands of Palestinian citrus trees. Many analysts believe that water scarcity is strictly structural, but Gaza's freshwater supply is entirely dependent on groundwater aquifers, which lie only a few meters from the surface. Therefore, the water supply of Gaza is more vulnerable to supply-induced scarcities, such as declining water levels, saltwater intrusion, and contamination. Mining, chemical contamination, and inadequate disposal of waste matter have overexploited Gaza's water supply since the 1970s. Demand-induced scarcities such as Gaza's growing population density of 1,936 people per square kilometer and limited water resources are inhibiting the per capita water availability. Therefore, population growth alone may outpace a sustainable supply of groundwater (Kelly and Homer-Dixon 73-82).

The social effects of these environmental scarcities are health impacts, agricultural decline, and economic losses. As with the Chiapas study, *Ecoviolence* explains through diagrams how water scarcity leads to social effects, such as health problems and agricultural decline, which in turn lead to economic decline. Economic decline further exacerbates corruption and increases resentment against Palestinian authority. *Ecoviolence* pointedly notes that a solution to water scarcity by itself will not solve the conflict, but is instead, only one of many integral elements that are preconditions for stable peace.

The Case of South Africa, *Valerie Percival and Thomas Homer-Dixon*

The role of environmental scarcity is possibly one of the most overlooked causal factors of social instability in South Africa. The election of Nelson Mandela and the transition to democracy brought about significant periods of peace, but civil strife continues in the KwaZulu Natal region, where the underlying stress of environmental scarcities is present. *Ecoviolence* specifically examines the region of KwaZulu-Natal, because much of the region is ethnically black and therefore violence cannot be ascribed to black-white differences.

Severe structural scarcities existed under apartheid; the black population had little political or economic power. Unequal access to land now affects 15 millions blacks working on white land. Demand-induced scarcity is prevalent as well. While the white population will stay constant around five million, the black population is expected to rise to 37.3 million by 2000. This estimated increase will produce still greater differentials in land scarcity per capita. Supply-induced scarcities also arise due to severe soil erosion. The topsoil is not suitable for the unsustainable agricultural practices used to support the high population level. Studies reveal that desertification threatens 55 percent of the land. Forest supplies are in critical scarcity, as wood for fuel is perceived as free. Trees are seen as a threat to space for crops, and thus expected to be nonexistent by 2020. Like Gaza, South Africa is a water-scarce region. The level of industrial pollution hampers South Africa's water supplies, as environmental controls are almost nonexistent according to the authors.

Four main social effects arise from South Africa's environmental scarcity: decreases in agricultural production, economic decline, population movement, and a weakening of institutions. Rural areas, such as the KwaZulu Natal region, are unable to support their growing populations and urban areas cannot adequately provide for the needs of the estimated

750,000 rural-urban migrants. The immense migration rate increases societal demands on both local and state institutions. Meanwhile, rising environmental scarcity causes social segmentation, which in turn further weakens institutional capacity. As the government declines and loses control of the segmented society, powerful groups seize control of resources. Grievances therefore escalate and transform into group divisions, which give rise to opportunities for violence. From 1989 to 1993 in the Natal region alone, there were an estimated 7,000 deaths from political and criminal motivations (Percival and Homer-Dixon, 114-132).

The election of Nelson Mandela enhanced expectations for change, but living conditions remain dismal. *Ecoviolence* suggests that if a successful transition to stable democracy and majority rule is to occur, South Africans must understand the links among environment, population, and security. Without addressing the environmental factors that contribute to violence, South Africa may once again return to pre-democracy levels of conflict and violence.

The Case of Pakistan, *Peter Gizewski and Thomas Homer-Dixon*

Pakistan is a Muslim state with numerous political clashes between regional, ethnic, and class divisions within society. Identifying causal linkages to violence in the Pakistani case is difficult due to severe data limitations. Nevertheless, *Ecoviolence* claims that the character of the Pakistani state, its political and economic development, historical tensions, and issues of environmental scarcity together trigger resource capture, marginalization of poor groups, a rise in economic hardship, and a weakening of the state.

Pakistan is doubling its population every 22 years and is now the tenth most populous nation in the world. The impacts of this dramatic 3.1 percent population growth rate are exhaustive, as efforts at family planning have met with little success. This causes demand-induced scarcity with further negative side effects, such as subdivision of rural agricultural holdings, the denuding of well-forested hillsides, and the migrations of large numbers of people to cities.

Supply-induced scarcity includes shortage of arable land that is intensifying with poor farming solutions. There is a severe lack of information concerning the use of agricultural inputs, which has left soils deficient in a number of nutrients. With Pakistan's arid ecosystem, water scarcity has always been an issue. The 1960 Indus Water Treaty has enabled Pakistan to gain control over much of its water resources, but inefficient irrigation and insufficient sewage treatment only leads to inadequate water for drinking and maintaining food self-sufficiency. Furthermore, Pakistan's *Economic Survey* reported devastating floods as a chief cause of the 3.9 percent drop in agricultural product. This flooding is exacerbated by the negative externalities of deforestation, such as soil erosion. Structural scarcities have always existed within Pakistan, mainly due to its unaccountable, military-bureaucratic oligarchy, marked by corruption and patronage. Resource capture now leads to the exploitation of forest and land by mafia figures with ties to the government (Gizewski and Homer-Dixon, 159-177).

While regional, ethnic, and class tensions have long been a feature of Pakistan, *Ecoviolence* suggests that resource scarcities are in the ascendance, contributing to a rise in social grievances. The capacity of the already diminished state is then further weakened. The state's weakness only encourages violent expression of long-standing ethnic, communal, and class-based rivalries. Group rivalries become increasingly urbanized as channels for resolution only weaken. Scarcity may become so severe it becomes self-sustaining. The Kashmir dispute may also become an outlet to divert attention from these internal crises.

The Case of Rwanda, *Valerie Percival and Thomas Homer-Dixon*

In October 1990, the Rwandan Patriotic Front (RPF) of Tutsi origin attacked northern Rwanda from Uganda, and in 1992 captured a significant portion of territory. The RPF was formed by those who fled Rwanda during the postcolonial establishment of the Hutu-dominated Rwandan government in the 1960s. A brief period of peace followed when a cease-fire was declared on 31 July 1992 and the two sides signed the Arusha Peace Accords in August 1993. But less than a year later on 6 April 1994, the downing of an airplane killing both Tutsi and Hutu leaders returning from peace negotiations unleashed genocidal violence by militant Hutus against Tutsis and moderate Hutus. The ensuing massacre of over 800,000 Tutsis led to a refugee crisis within Rwanda and in surrounding countries. The eventual victory of the RPF in civil war led to a second exodus, this time of Hutu refugees.

Many claim that environmental factors were responsible for this civil violence. *Ecoviolence* argues that this interpretation may indeed be too "simplistic." Rwanda's ecosystem consists of swamps, lakes, great plateaus, steep slopes, and sporadic precipitation. This diversity makes analyzing supply-induced and demand-induced scarcity difficult. Nonetheless, supply-induced scarcities exist, seen for example with peasants substituting manure for firewood, water resources constrained by watershed and wetland loss, and over-cultivation. Demand-induced scarcity also plays a critical role in this area with a population density of 290 inhabitants per square kilometer, one of the highest in Africa. Structural scarcity is not as serious, but the demand-induced and supply-induced scarcities alone have resulted in numerous social effects, such as declining agricultural production, migration, and eventually decreasing government legitimacy. Rwanda, once a top African food producer, had become one of the worst by the late 1980s (Percival and Homer-Dixon, 205-209).

While environmental and demographic stresses in Rwanda were severe, authors Percival and Homer-Dixon argue that other political and economic factors such as insecurity among Hutu elites, declining coffee prices and existing ethnic cleavages were central to the complex causal mix. Hence, despite the appearance of strong environmental scarcity contributions to the conflict, close examination reveals a muted contributory role in causing the violence.

Thomas Homer-Dixon and Jessica Blitt conclude

Ecoviolence with eight key conclusions they draw from the case study research:

1. Under certain circumstances, scarcities of renewable resources such as cropland, freshwater, and forests produce civil violence and instability. However, the role of this "environmental scarcity" is often obscure. Environmental scarcity acts mainly by generating intermediate social effects, such as poverty and migrations, that analysts often interpret as conflict's immediate causes.
2. Environmental scarcity is caused by the degradation and depletion of renewable resources, the increased demand for these resources, and/or their unequal distribution. These three sources of scarcity often interact and reinforce one another.
3. Environmental scarcity often encourages powerful groups to capture valuable environmental resources and prompts marginal groups to migrate to ecologically sensitive areas. These two processes—called "resource capture" and "ecological marginalization"—in turn reinforce environmental scarcity and raise the potential for social instability.
4. If social and economic adaptation is unsuccessful, environmental scarcity constrains economic development and contributes to migrations.
5. In the absence of adaptation, environmental scarcity sharpens existing distinctions among social groups.
6. In the absence of adaptation, environmental scarcity weakens governmental institutions and states.
7. The above intermediate social effects of environmental scarcity—including constrained economic productivity, population movements, social segmentation, and weakening institutions and states—can in turn cause ethnic conflicts, insurgencies, and coup d'etat.
8. Conflicts generated in part by environmental scarcity can have significant indirect effects on the international community (Homer-Dixon, 224-228).

The key findings of *Ecoviolence* suggest that environmental scarcity will worsen in many developing countries and may become an increasingly important cause of violent rebellions, insurgencies, and ethnic conflicts. Because the effects of environmental scarcity are indirect, acting in combination with other social, political, and economic stresses, policymakers may find the conclusions difficult to operationalize as they respond to unfolding crisis situations. Nevertheless, the empirical data pertaining to environmental scarcity and the causal relationships between the environment and societal unrest provide valuable depth to the field of environmental security.

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The World's Water 1998-1999: The Biennial Report on Freshwater Resources

Peter H. Gleick

Washington, DC: Island Press, 1998. 307 pp.

Reviewed by Michael K. Vaden

The human and ecological consequences of polluting and mismanaging the world's freshwater resources have come to the forefront of academic research as well as the popular press. However, few works take a holistic approach to examining this complex subject while at the same time keeping it accessible to a broad audience as well as the serious researcher. Even fewer works have traced the links between water supply and international security and conflict. That is until now. Peter Gleick, President of the Pacific Institute for Studies in Development, Environment and Security, offers a comprehensive look at the crucial water problems facing humanity and the natural world with *The World's Water 1998-1999: The Biennial Report of Freshwater Resources*.

Updated every two years and written for the general reader as well as the expert, this first edition provides a solid foundation of detailed information on the state of the world's freshwater resources, what is known and what is unknown. After orienting the reader to the basics of hydrology and climatology, the book explores a broad array of subjects essential to understanding the global dynamics of water such as: the changing water paradigm; water and human health; the status of large dams; conflicts over shared water resources; and an update on new water institutions including the World Water Council, the Global Water Partnership, and the World Commission on Dams. Gleick also outlines a "sustainable vision" for the world's freshwater resources in the year 2050.

This well-received book also offers the serious researcher a single source for over 50 charts, tables and maps that detail up-to-date data including the availability and use of water, numbers of threatened and endangered aquatic species, trends in waterborne diseases, desalination capacity, and global irrigation data, as well as the complete texts of the Convention on Law of Non-Navigational Uses of International Watercourses and the new treaty between India and Bangladesh on the Ganges River. Another very useful tool in the report is a well-rounded list of water-related Internet websites. A website has been created in tandem with the release of this book at http://www.worldwater.org which includes links to a vast array of water-related sites and downloadable data sets on global freshwater resources problems. The report can be purchased at http://www.islandpress.org or by calling 1-800-828-1302.

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The Corporate Planet: Ecology and Politics in the Age of Globalization

Joshua Karliner

San Francisco: Sierra Club Books, 1997. 298 pp.

Green Backlash: Global Subversion of the Environmental Movement

Andrew Rowell

London: Routledge, 1996. 476 pp.

Reviewed by Kate O'Neill

"I think one has to know that if you are being effective, there will be backlash."

Vandana Shiva, quoted in *Green Backlash*, p. 1.

"[T]ransnationals do 'not represent the universal human interest' but rather 'a particular local and parochial interest which has been globalized through its reach and control.'"

Vandana Shiva, quoted in *Corporate Planet*, p. 6.

Green Backlash and *Corporate Planet* are complementary in many ways: Rowell's *Backlash* documents the spread of anti-environmentalist movements worldwide in their many different guises; Karliner's *Corporate Planet* focuses on the global environmental impact of the spread of multinational corporations. Both are eminently readable, thoroughly researched and offer prescriptions for action for environmental activists. Both authors make extensive use of examples from around the world, and their cases—again complementary, as in Karliner's choice of Chevron versus Rowell's choice of Shell in studying the oil industry—are a goldmine of useful and provocative information. Put together, these books paint a vivid, disturbing and timely picture of the forces working—often but not always intentionally—against environmental protection and activism, and the extent of the political and economic power they wield. In this, Rowell goes one step further, documenting the use of violence and extremist tactics and the role of the state in such actions.

Rowell makes three linked arguments in *Backlash*. First, there has been a paradigm shift away from new social movements back towards movements embracing conservatism and the status quo. Second, he identifies a backlash "blueprint" or template of ideology, rhetoric and tactics, apparent in many countries. Third, backlash groups around the world are often connected, through networking, public relations firms, and similar means. He stops short of crying global conspiracy but draws clear linkages between anti-environmentalists and other conservative and radical (anti-government) groups in the United States and elsewhere. His case material is broad. Sections on the United States cover the Wise Use movement, the radical right, "think tanks," and the work of corporations. Tactics by these organizations consist of "greenwash," channeling funds into politics, seeking to undermine environmental groups and SLAPPs (Strategic Lawsuits Against Public Participation). Tactics used by both state and non-state actors to silence opponents include surveillance, suppression, and violence. Other chapters cover clear-cutting debates in Canada, the "fight for the forests" in Central and Latin America, and backlash phenomena in Australia, New Zealand, South Asia and the Pacific, and Great Britain. Chapter 11 goes into considerable depth on the plight of the Ogoni people, the death of writer Ken Saro-Wiwa and the political and economic impact of the big oil multinationals in Nigeria. His cast of characters is huge, and he handles them well, using a wide range of sources and some choice quotes to illustrate his arguments (e.g.: one anti-environmental type describes national parks as "scenic gulags" p. 131).

The strongest case Rowell makes is that a "backlash template"—a repertoire of tactics which have the effect of marginalizing and scape-goating pro-environmental interests—can indeed be applied to different countries. At the same time, he shows how state-society relations vary across the cases. Nowhere is the state absent. In the United States and the United Kingdom, law enforcement agencies have at a minimum stood by and at maximum much worse. In many other countries, resource conflicts have become a major reason for repression. More discussion of the attitudes of the broad, "non-activist" public towards the green backlash was missing, whether it is support, opposition, ignorance or apathy. With the possible exception of the Wise Use movement, it appears as if these are small (but often powerful) groups for whom a broad base of public support is minimal or absent. Furthermore, examples of how the United States Environmental Protection Agency situates itself would also have been welcome (attacks on several federal officials are mentioned but not discussed).

Karliner's *Corporate Planet* covers the impact of globalization and the spread of transnational corporations on the global environment—the "blue planet…held hostage to the tyranny of the bottom line" (p. 3). His focus is less on explicitly anti-environmentalist tactics than on how the full panoply of corporate activities has a negative impact on the environment and how this can be addressed. He is concerned primarily with the large transnational corporations, the erosion of state sovereignty and the loss of democratic accountability through capitalist expansion. *Corporate Planet* is also more optimistic in its conclusions about the likelihood of a reconciliation between competing interests than is *Backlash*. Karliner's argument is one that has been made before. However, this book is a great introduction for those new to the topic. It is also rich in both historical perspective and interesting detail. His cases—the rise of Chevron, Japan's pollution at home and abroad, the role of free trade and the migration of hazardous industry, the "emerald city" of advertising (after the enchanted city in the *Wizard of Oz* that was not quite what it seemed), public relations and "greenwash" (another parallel with *Backlash*), and the recurring theme of the role of corporations in global environmental diplomacy—are well chosen and detailed. Anecdotes hold the reader's attention, particularly Chevron's "Disney-like" compound in Papua New Guinea, replete with fireworks and larger-than-life celebrations of local

mythology. I found his prioritization of the environment industry ("a group of toxics-hauling, wastewater-cleaning, air pollution-scrubbing corporations," pp. 34-35) as a main villain of the piece interesting but not altogether well founded. After all, these firms would not exist without the bigger corporations.

Finally, both books are explicitly activist in their agendas; therefore both make prescriptions for action throughout and in conclusions. Rowell's prescriptions are aimed primarily at environmental groups; practical, especially given the likely audience for the book, but at the same time limiting. He argues that environmental groups need to re-shape their tactics and go back to their roots by, for example, emphasizing the redistributive elements of environmental politics. With this strategy, they can (re)build their bases of support and counter claims that "people are left out of the equation." He also suggests that they highlight the growth frequency and severity of cases of violence and intimidation against activists and, together, fashion a more coherent vision of a sustainable and just future. He remains firmly opposed to the notion that even large corporations can be won over; admittedly probably true with respect to supplanting the global free market with a more sustainable economic system, but not necessarily so when it comes to forswearing intimidation and fostering more cooperative routes to resolving environmental conflicts. He also downplays the potential for some state actors to act as mediators in resource or pollution-related disputes.

Karliner also favors working towards fashioning a more sustainable, just, and democratic future. He emphasizes forging links between local, national and supranational actors and infrastructures and increasing democratization at all these levels—"thinking and acting both locally and globally at the same time" (p. 199). His concluding chapter provides some success stories where local innovation has led to corporate behavior change—as in the case of "Greenfreeze," an environmentally friendly refrigerator design developed and made popular by Greenpeace in Germany and subsequently picked up by major manufacturers. Others, such as the Zapatista movement, have proven less successful. He is perhaps over-optimistic about the potential for organizations such as the World Trade Organization in becoming truly receptive to societal demands. Furthermore, perhaps more attention could have been paid to the efforts of some firms to reform themselves from within; there is room for a book on Shell Oil alone in this respect. However, in sum, both books make significant and coherent contributions towards understanding environmental conflicts and the actors and stakes involved an area where such work is much needed.

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Plan & Conserve: A Source Book on Linking Population and Environmental Services in Communities

Robert Engelman

Washington, DC: Population Action International, 1998. 112 pp.

Reviewed by David Jacobstein

One of the underlying assumptions of the field of environment studies is that people can cause irreversible damage to their habitat; a prime motivation in family planning work is to prevent overpopulation because it results in poverty or famine as resources are depleted. Hence it seems logical that workers in these two fields would long ago have linked their services towards a common goal. In fact, however, it is only recently that any real headway has been made by organizations attempting to integrate population and environment concerns. Now a new sourcebook bringing together recent developments in community-based population and environment activities is available. *Plan & Conserve*, written by Robert Engelman of Population Action International (PAI), is an attempt to draw together the lessons of population-environment linkages in the past and formulate an agenda for the future. As the director of PAI's Population and Environment Program, Engelman is well situated to attempt such a broad venture. His program has garnered information on the subject, and particularly on the community-based aspect of it, for the last six years.

Clear and direct, but peppered with anecdotes and examples, *Plan & Conserve* does an admirable job of focusing on the importance of integrating population and environmental services before detailing how that task can be accomplished. Engelman prefaces his comments on population-environment integration by presenting the history of attempts to integrate family planning programs with other services—health, development, and environment. He traces the steady growth of understanding and cooperation between population and environmental services from the World Population Conference in Bucharest in 1974 through its "ebb and flow" to the present day. Although some early family planning groups successfully incorporated environmental activities into their programs in order to better connect with their clients, such cases were few and far between. Engelman introduces a few of the important groups involved in integration, such as World Neighbors, CARE, and the University of Michigan Population-Environment Fellows Program. In addition to familiarizing the reader with the important names in the field, this history serves to trace the trial-and-error process that determined the best methods for integrating family planning and other services.

Having taken his reader through the history of population-environment integration, Engelman next focuses on the critical and oft-neglected question of why it is important to find good ways of combining these services. Examining the issue from first the family planning and then the environmental perspectives, he gives clear reasons for each side to support integration. Because environmental projects often succeed

through the support of women, linking environment projects to programs that improve women's reproductive health is practical. Similarly, the coupling of the two services often expands the client base of each one. Finally, lower birth rates generally reduce the strain on sustainable resources, with associated benefits for the environment. He makes persuasive arguments from case studies of 42 projects that efficiency, effectiveness, and expansion of the client base can all be increased through integration. Of course, it is not enough to explain why population-environment integration carries numerous benefits: one must analyze the obstacles interfering with this integration and how these obstacles can be overcome. Engelman therefore next lays out the major hurdles that integration must surmount: fear over the meaning of "population," the inability to reach target groups because of gender inequality, poor connections, cost-benefit drawbacks, the difficulty of finding indicators of success, and potential conflicts of interest among communities, agencies and donors.

Engelman does a relatively good job of presenting these obstacles from an unbiased perspective, neither trivializing them nor painting detractors as obstinate or foolish. However, at times the narrative paints religious opposition to population programs as one-dimensional. He examines a couple of projects undertaken with the support of Catholic officials, but describes them as holes in a wall rather than inroads to further cooperation. Nevertheless, Engelman addresses each concern separately, giving compelling arguments of how to overcome the problem. In one case, he shows how gender inequality problems can be offset by having facilitators talk separately with groups of men and women, and then bringing them back together: "After these discussions, men and women are brought together to communicate with each other about these issues, a rare occurrence in these villages. This 'opens the eyes'" (p. 47). In instances where the objection is valid, he plainly admits it. For example, although integration is his stated ideal, he weighs advantages and disadvantages of integration, collaboration, and referrals in an evenhanded manner. This straightforward approach makes his suggestions very convincing.

Having laid the groundwork for population-environment integration, clearly stating its benefits and analyzing the means to overcome its detractors' objections, Engelman proceeds to offer suggestions of new areas for needed research and scholarship. Some of these areas are theoretical, such as assessing whether the communities and the agencies that work with them are at common or cross purposes and which benchmarks measure success from which perspectives. Other areas are more practical, such as finding the most effective sequence of services that community-based population and environment can offer, ways to attract more donor support, or the best ways to involve indigenous peoples, local governments and local NGOs. Finally, some areas are topics that have been ignored by population-environment workers, such as migration or urban communities. The sourcebook concludes by listing project profiles of the leaders in community-based population and environment activities. This index provides an insight into the specific details of the processes Engelman has outlined, as well as an important resource for anyone thinking of taking up one of his suggestions for further research.

Plan & Conserve succeeds as a useful and interesting sourcebook for two reasons which are almost at odds with each other: it presents itself in a clear, concise progression from historical context to future agenda, yet it inserts an almost-dizzying array of anecdotes, evaluations, and transcripts of conversations. The logical simplicity of Engelman's arguments and analysis give the book a focus and direction. Engelman manages to maintain equilibrium in his tone, which keeps his conclusions from sounding prejudiced. In a sourcebook this is critical, since it makes the book approachable to an uninformed or skeptical reader, inviting them to take a fresh look at the issues. At the same time, the evaluations and anecdotes both provide evidence of the trends Engelman is discussing and put a human face on the issues of family planning, environmental protection and women's rights. The inserts also help to keep uninformed readers interested in an otherwise clear but dry narrative. Overall *Plan & Conserve* serves as an intriguing introduction to the field of community-based population and environment activities and an excellent resource for further population-environment integration efforts.

For further information on PAI's Population and Environment Program, or *Plan & Conserve*, visit the web pages:
http://www.populationaction.org or
http://www.populationaction.org/why_pop/pc_index/pc_index.htm.

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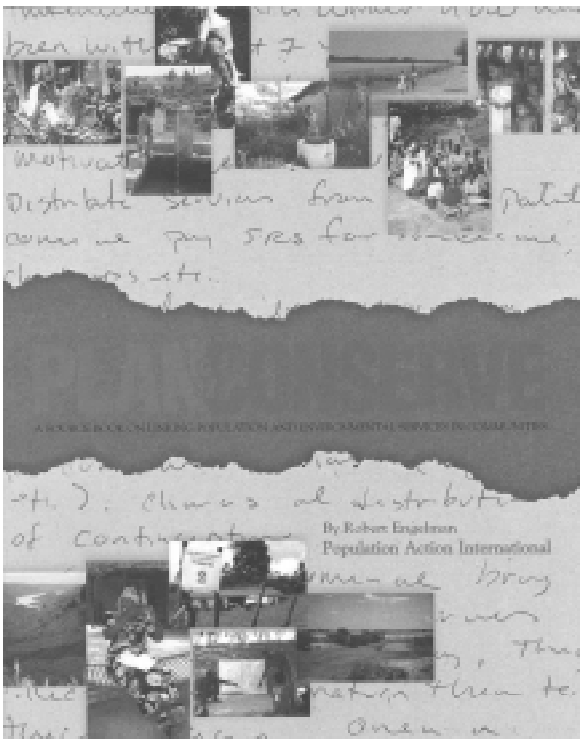

Population Reports

A series of reports published by the Population Information Program of the Johns Hopkins University School of Public Health.

Reviewed by Karin I. Mueller

The potential ramifications of global population growth on human and ecological systems are staggering. According to *Population Reports*, a quarterly series published by Johns Hopkins University School of Public Health, increases in the world's population carry important implications for natural resources, food and water supplies, and the health and quality of life for people worldwide. The series' topics range from those directly related to family planning, like oral contraceptives and sterilization, to issues such as water scarcity and food supply that are indirectly affected by family planning policies and their implementation. Regardless of the particular topic, the recurring theme throughout the *Reports* is that family planning programs have a direct affect on reducing human population growth and, consequently, on the quality of the world's environment. Three issues of *Population Reports* were reviewed, each focusing on a different topic: food security, water scarcity, and family planning programs.

Winning the Food Race (No. 13, Series M) *Don Hinrichsen*

"In many developing countries rapid population growth makes it difficult for food production to keep up with demand. Helping couples prevent unintended pregnancies by providing family planning would slow the growth in demand for food. This would buy time to increase food supplies and improve food production technologies while conserving natural resources."

Population Reports (No.13, Series M), p. 1

As defined by the United Nations Food and Agriculture Organization (FAO), food security refers to access by all people to an adequate amount of "safe and nutritious food to maintain a healthy and active life." Yet, despite the fact that the global economy produces enough food to feed the world's population, many people lack access to enough food for a healthy life. Hence, better distribution of food is necessary if food security objectives are to be met. Also, ensuring family planning services would help to lower birth rates, thereby decreasing the demand for food as well.

In poor countries, where population size is usually increasing rapidly, hunger and malnutrition can be critical problems. Overuse of limited natural resources including arable land, freshwater, and fisheries, coupled with world markets unfavorable to developing-country agriculture and a lack of regional trade and cooperation, have raised questions about whether food production and distribution can improve fast enough to match the pace of population growth. Don Hinrichsen asserts that to "win the food race," a coordinated approach is necessary for increasing agricultural production, improving food distribution, managing resources, and providing family planning to slow population growth. He argues that the ultimate outcome of the effort to achieve food security will depend on answers to the following questions. Will a new Green Revolution increase crop yields so that food supplies can keep up with growth in food demand? Will there be a reduction in resource degradation, waste, and pollution? How soon will reproductivity levels decrease to replacement-level fertility worldwide? The *Report* states that better coordination between population policies and agricultural policies could help improve food security. Also, improving support for family planning services could enable the world to reach replacement level fertility, allowing attention to shift from keeping food production on pace with population growth to improving the quality of life for all.

Solutions for a Water-Short World (No. 14, Series M) *Don Hinrichsen, Bryant Robey, and Ushma D. Upadhyay*

"As populations grow and water use per person rises, demand for freshwater is soaring. Yet, the supply of freshwater is finite and threatened by pollution. To avoid a crisis, many countries must conserve water, pollute less, manage supply and demand, and slow population growth."

Population Reports (No.14, Series M), p. 1

The demand for freshwater is growing rapidly worldwide. In discussing ways to address water scarcity, Don Hinrichsen, Bryant Robey, and Ushma D. Upadhyay, project that it may already be too late to avoid a crisis in some areas, particularly the Middle East. According to the *Report*, a water-short world is an unstable world, and therefore finding solutions to water scarcity and pollution should be a high priority. Unless drastic steps are taken quickly, water crises will increasingly present formidable obstacles to better living standards and better health, and to maintaining peace both within and between nations. Over the long-term, continuing and expanding family planning programs can help slow population growth and therefore decrease demand for freshwater. Hinrichsen, Robey, and Upadhyay contend that a "Blue Revolution" in water management is needed to conserve and manage freshwater supplies. Reaching solutions to current and potential water shortages will require coordinated responses to population growth, industrial and municipal use of water, and irrigated agriculture, at the local, national, and international levels.

Family Planning Programs: Improving Quality (No. 47, Series J) *Adrienne J. Kols and Jill E. Sherman*

"At its most basic, providing good quality means 'doing the right things right,' according to W. Edwards Deming, a pioneer of the quality movement in industry. In health care and family planning this means offering a range of services that are safe and effective and that satisfy clients' needs and wants."

Population Reports (No.47, Series J), p. 3

According to Adrienne Kols and Jill Sherman, improving the quality of family planning programs and reproductive health care in developing countries offers many benefits to family planning clients. These benefits include: safer and more effective

contraceptive use; more accessible and more widely used information services; more informed decision-making by clients; and improvements to a program's reputation. Better quality helps ensure that clients are more satisfied and more likely to continue using planning services (which ultimately contributes to decreasing global population growth).

The *Report* points out that there are three basic elements of quality in family planning. By addressing these elements family planning programs can achieve and maintain quality services. The elements include: 1) providing client-centered care; 2) focusing on a set of management principles that include strengthening systems and processes, encouraging team work, empowering staff, basing decisions on reliable information, and establishing a leadership that is committed to good quality; and 3) maintaining a methodology to achieving quality service by addressing all three points of the "quality assurance triangle" – quality design, quality control, and quality improvement.

As Kols and Sherman point out, achieving quality assurance in family planning and related health care programs is a long-term process, necessitating changes in organizational culture, goals, guidelines, and daily operations. Most developing country initiatives are too recent to show which approaches are the most effective. However, quality assurance has been shown to be helpful to family planning programs when it leads to utilizing resources more efficiently, solving service-related problems, and increasing customer satisfaction. As quality assurance methods continue to evolve and as researchers and program managers test different approaches, health care and family planning programs will continue to improve their quality of service, and ultimately achieve their goals of increasing client satisfaction and slowing global population growth.

Taken together, the *Population Reports* series informs readers of important research and policy developments in areas directly and indirectly related to family planning. Because of the diversity of topics covered as well as the depth with which they are addressed (particularly the extensive bibliographies), *Population Reports* should prove to be a useful resource to practitioners, scholars, and educators.

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Which World? Scenarios for the 21st Century

Allen Hammond

Washington: Island Press, 1998. 306 pp.

Reviewed by Jessica Powers

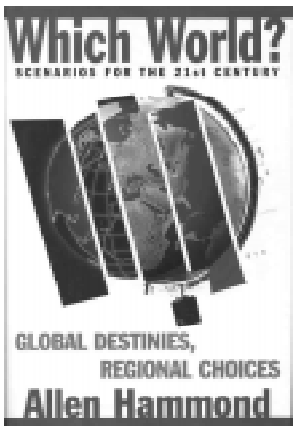
How will the world look in 2050? Are we to continue in the current vein, which will lead to global "prosperity, peace, and stability" according to some economists? Will we head into a new and far more environmentally detrimental world, an ominous world where the gap between the rich and poor only widens? Or alternatively, will we have to overcome the phenomenon of least common denominator policies and rise to new heights of development both economically and socially? Allen Hammond, senior scientist at the World Resources Institute (WRI), presents these three scenarios in his latest book. He explores the opportunities for and consequences of choosing one scenario over the others. The decisions are key to whether we will turn back environmental deterioration and poverty and head towards greater sustainability.

Which World? is an outgrowth of the 2050 Project at WRI, an attempt to illustrate what choices are available to policymakers and encourage trend analysis in making policy decisions. Hammond utilizes two tools: scenarios and trends analysis. This work offers three idealized scenarios of what the future could look like depending on which choices leaders make over the next 50 years. He outlines the economic, environmental, security, and social trends that would play into each scenario's outcome. The book concludes with a region-by-region analysis of current trends.

Hammond offers as his first scenario the Market World, where free market forces lead to economic and human progress. Technological innovation and market reform will incorporate developing countries into the global economy. Those who favor this scenario point to examples of successful economic development as proof that the market will fix everything. Yet, Hammond points out that this approach to achieving human development and reducing poverty may have some notable drawbacks. Numerous examples find the prevailing market forces aggravating regional troubles. Russian health indicators are plummeting and the gap between the rich and poor is growing, not shrinking, as the country transitions to a market economy. Hammond cites cases where the laissez-faire economy is, on balance, proving more detrimental than beneficial to already economically and socially depressed regions.

In his second scenario, Fortress World, Hammond suggests a much more portentous future. He quotes Madhav Gadgil when he describes the world as "islands of prosperity, oceans of poverty." As in the first scenario, no social or individual behavioral changes are made and the market is left to guide the global economy. Instead of market forces leading to

technological progress and social and economic wealth, the inaction of the policymakers only exacerbates prevailing trends, leading to far worse economic, social, and environmental consequences.



The third scenario, what Hammond has termed Transformed World, has forces of the market and technological advances combining with sound and equitable policymaking to achieve a more stable and prosperous future for many segments of the population, not just a few elites. Regions make conscientious decisions to reverse ecological damage; institute policies and laws that benefit all of society; and work together to maintain peace and stability. Hammond cites current trends that could anticipate the plausibility of such a vision. These examples include 1) increasing family-planning assistance, thereby allowing families to make their own decisions regarding the number and spacing of children; 2) technology transfers that allow more people to engage in the global economy; 3) the growing number of companies that voluntarily conduct environmental impact assessments; 4) rising literacy rates; and 5) urban renewal projects that target sustainable use of resources.

Hammond recognizes these scenarios as idealized types; likely futures will be some combination of the three. He uses them to highlight alternative paths and lay the basis for his discussion of current trends. To facilitate dialogue and encourage informed decision making, Hammond analyzes current economic, environmental, social, and security trends. The first set of trends includes demographic, economic, and technological trends while the second includes environmental trends such as ecosystem destruction, pollution, and rural impoverishment. Thirdly, Hammond looks at critical security trends consisting of crime, arms proliferation, unemployment and migration, and urban unrest. Finally, he examines different political and social trends comprised of the rise of women's empowerment, human and social development, marginalized cultures, and democratization efforts.

The final part of the book is a more comprehensive analysis of the above-listed trends from region to region. In each region Hammond highlights the more critical issues facing those countries and addresses how choices made today to deal with those issues will irrevocably change future development. Despite being the most prosperous of the developing regions, Latin America has the widest gap between rich and poor that is continuing to grow, rather than abate. China and Southeast Asia also suffer from inequitable growth and corruption, but in addition have even more restrictive governance structures where political freedoms are few. India is faltering under endemic poverty and its unchecked population growth and will eventually surpass China as the country with the largest population. Sub-Saharan Africa is the most economically depressed region in the world with AIDS and other diseases killing a population already decimated by civil strife and decolonization. The Middle East and North Africa are experiencing rapid population growth that continues to stress already limited water supplies. Russia and Eastern Europe have stumbled through economic and political transitions since the end of the Cold War. The former Eastern Bloc has some of the worst toxic contamination from nuclear facilities. Finally, North America, Europe, and Japan, although the most democratically secure and economically viable regions, also have problems associated with urbanization and growing economic disparities.

Overall, this book represents an excellent tool for identifying current trends and analyzing them within regional contexts. The scenarios should be a wake-up call to policymakers. As a scientist, Hammond presents a balanced perspective that highlights constructive alternatives to address negative trends. He focuses needed attention to the numerous disturbing trends for the 21st century without the common usage of scare tactics.

Jessica Powers is an Editorial Assistant at the Woodrow Wilson Center's Environmental Change and Security Project and Managing Editor of the Environmental Change and Security Project Report.

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Economic Globalization and Political Stability in Developing Countries

Nicolas van de Walle

The New Security Thinking: A Review of the North American Literature

Ann M. Florini and P.J. Simmons

Poverty, Inequality, and Conflict in Developing Countries

Joan M. Nelson

Publications by the Project on World Security, Rockefeller Brothers Fund, 1998.

Reviewed by Moushumi Chaudhury

Economic Globalization and Political Stability in Developing Countries, *Nicolas van de Walle*

This report by Nicolas van de Walle describes the debate over whether economic globalization and the integration of national economies have the potential to promote political stability without any significant increase in present inequalities. First of all, he presents the various perceptions and the extent of "economic globalization" through the increase of foreign direct investment, technological advancements and global commodity changes. However, despite such progress of integration into the global economy, van de Walle claims that there are critics who believe that such a process is detrimental because firms choose to invest in countries with low wages to

further advocate the "leveling down" of already low wages. Such a situation creates the potential to increase political tension and economic inequality. Yet, on the other hand, Gini coefficients that measure inequality seem to be decreasing in many developing countries. The second set of arguments presents whether economic globalization creates a "volatile" atmosphere due to the "speed" of integration that does not allow governments time to adjust to an international setting. The third argument introduces the vulnerability of state sovereignty. Many critics claim that governments are slowly becoming incapable of controlling capital mobility, but this may be because Third World governments do not have choices and are powerless to fight the international financial world. Even though this allows states to have access to international markets, which could itself be a solution to ethnic conflict, this situation has the potential for disrupting the state's ability to mediate ethnic conflict by eradicating the potential to strengthen the national economy. Ultimately, van de Walle comes to the conclusion that changes in the economic system are not sufficient in themselves for explaining the reasons behind ethnic conflict. It is also important to understand ethnic conflict within the context of the way political institutions and individual political actors function.

The New Security Thinking: A Review of the North American Literature, *Ann M. Florini and P.J. Simmons*

The term "security" has in the past been understood under the context of military action and in the light of the realist and neo-realist perspectives where maintenance or increase of military power is the key to protecting state sovereignty. However, in this report and through the review of pertinent literature, Ann Florini and P.J. Simmons analyze the importance of understanding "security" in a non-military fashion. Apart from military threats, there is reason to be wary of the instability caused by overpopulation, economic inequalities, resource depletion, and environmental degradation.

The combination of economic and resource scarcity itself can culminate to inter and intra-state violence, especially when states fail to provide resources. Furthermore, as security risks become more global due to the sharing of natural resources, the role of the state must also change to accommodate the increasing interdependence of non-military threats to prevent "fragmentation" of societies. In other words, Florini and Simmons have shown that the question of "human security" is contested: should it be more nation-based or provided collectively? Such concepts are finally explored by examining how Canada and the United States have pursued "security."

Poverty, Inequality, and Conflict in Developing Countries, *Joan M. Nelson*

Understanding the definitions of poverty and inequality has been a process filled with ambiguity. This report by Joan Nelson, a Senior Associate at the Overseas Development Council, not only helps the reader to comprehend the various definitions of "poverty," but it also demonstrates how poverty is linked with issues of economic globalization and civil conflict. In order to analyze this connection, Nelson first explains the differing definitions of poverty by discussing the role of the Gini coefficient that measures the extent of inequality and economic classes. With such definitions in mind, the report next discusses Kuznets' U-shaped relation between income and equality. In addition to providing the debate on whether the Kuzets model is valid, Nelson suggests that the pace of economic growth, political economy, and access to credit markets could be alternative indicators of the relationship between poverty, inequality, and economic growth. Furthermore, economic policies such as structural adjustment and their effects on inflation, price controls, the poor, and employment are also discussed in this report.

The final, analytical chapter demonstrates the relationship between civil violence and economic trends. Among the host of theories as to why civil violence in collectives occur in relation to economic trends, Nelson states that one possible factor could be a state of "absolute deprivation" where the lack of basic needs could lead to anger and finally to violence. Another theory could be based on "relative deprivation," where not being able to achieve can lead to frustration and violence. Furthermore, Nelson states that ethnic conflict is likely to occur when an ethnic group is faced with either competition with other groups or economic discrimination. Ultimately, this report suggests that globalization of the economy will affect the level of poverty and inequality, as well as the level of security among ethnic rivalries, with the extent of change still being ambiguous.

Moushumi Chaudhury is a Research Assistant at the Woodrow Wilson Center's Environmental Change and Security Project.

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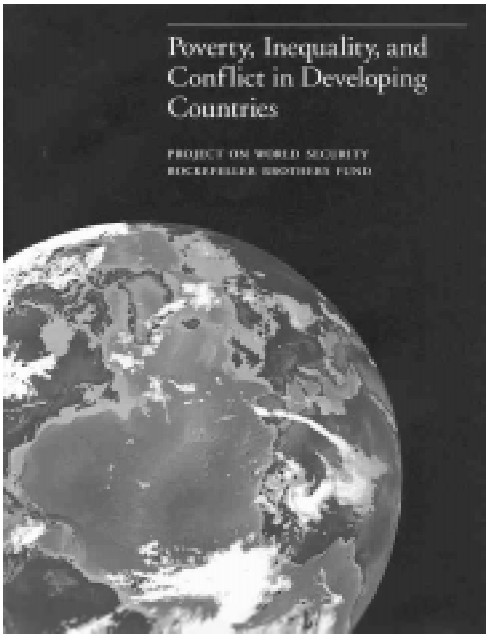


ECSP Meeting Summaries

2 February 1998

Can Anything Be Done? Prospects for Environmental Management in the New Russia

D.J. Peterson, Resident Consultant in the International Studies Group at
The RAND Corporation, Santa Monica, California

There are two major transitions currently taking place in Russia: the transition from a centrally planned economy to a market-oriented economy and the transition of Russia from an industrial country to a post-industrial one, remarked D.J. Peterson at an Environmental Change and Security Project and Kennan Institute co-sponsored meeting on 2 February 1998. Peterson, resident consultant in the International Studies Group at the RAND Corporation, explained that Soviet culture was quintessentially a modern culture, one in which images of industry were glorified. A large part of the transition in Russia is how to address the legacy of the industrial past and clean up these facilities while trying to address the new pressures of the future. Peterson focused on several problems resulting from Russia's transition: traffic, trash, and suburbanization.

In Moscow, and most other Russian cities, one of the biggest changes is the huge rise in the number of cars. This has large implications on many different levels. There are not many paved roads in Russia to accommodate the increase in traffic. The Russian government has funded many projects to improve existing roads as well as to build new ones, but this too has impacts on the environment, namely air pollution and urban sprawl. As road conditions improve, more small towns and villages near large cities are becoming suburbanized.

Suburbanization brings the problem of how to provide clean water to growing villages that do not have running water or sewerage. The infrastructure is not keeping pace with private home building. Obviously, the lack of infrastructure in general could cause substantial environmental and health problems down the road.

In the past, the Soviet government paid for such services and local industries managed the facilities. Now, these facilities are privatized and such services have been turned over to local governments to manage. The population does not want to pay for services that were once free during the Soviet Union.

Another major problem facing Russia today is the problem of trash. In addition to the increase in volume, there is the problem of types of trash not seen before. Westernization brought a great increase in non-biodegradable packaging. This raises the question of how to pay for new landfills and waste collection systems.

These problems can be addressed by bringing new technologies to Russia, Peterson argued. One solution lies in economic reforms that promote investment in general, and the diffusion of clean technologies, in specific. However, new technology will only solve part of the problem. The Soviet Union was good at the development and implementation of technologies. What Russia lacks is strong management. Poor management has created many environmental problems and wasted resources. Better organization driven by market incentives to increase productivity could help without expensive technologically-based solutions. One option is to fix Russia's notoriously leaky plumbing to ease pressure on the water supply and wastewater treatment systems.

According to the speaker, environmental managers in Russia are either scientists or engineers. They know how to develop the technology to solve their problems, but not how to develop and implement effective strategies for environmental protection. This is an area where the United States could provide assistance.

Russia is different from other countries of a similar income level in that Russia already has post-modern values in which vacations and free time are valued. There is a growing population in Russia interested in the "good life" that is present in nature. Growing tourism in areas such as Lake Baikal brings a new challenge of how to promote the "love of nature" without trashing it at the same time. This raises the question of how to build the infrastructure to deal with the problem. Lessons from places like Lake Tahoe may illustrate what protective measures may be appropriate.

There have been some attempts to remedy this, Peterson noted. There are efforts to get Russia's children interested in their community. If the younger generation gets involved, they may influence their parents, say to stop littering—such as what has happened in the United States. There are also attempts to bring once closed natural areas such as parks to the people and to build

up a community of interests.

In Russia, there are many opportunities for international assistance to help with nature reserves with global significance. For example, there is a species of crane which migrates between Japan and Russia. Without international cooperation to protect its nesting grounds, this particular bird will not be able to migrate back to Japan.

Peterson remarked that the transition in Russia is proceeding very rapidly with one year in Russia being equal to roughly thirty years in the United States. As a result, we can expect a fundamental change in Russia's economy as well as its culture in the next ten years and certainly within the next generation. The challenge lies in how to negotiate this rapid change without worsening existing problems. This change creates a rich opportunity for improving management and education to focus on people and get them involved in the fate of their communities.

Russia wants to be like the United States and to have what we have. For the environment this is both good news and bad. Perhaps with time, the idea that nature should be valued for itself and that it is not just for exploitation, will arise.

Dialogue

Dialogue is an award-winning radio program, produced at the Woodrow Wilson Center, that explores the world of ideas and issues in national and international affairs, history, and culture. *Dialogue* has produced six programs, listed below, with ECSP visitors and staff. *Dialogue* is hosted by George Liston Seay.

Geoffrey D. Dabelko, "Environmental Issues of the Next Century" (Program #495)
Broadcast Week: July 19 - 25, 1999

Senator Paul Simon, "Tapped Out" (Program #466)
Broadcast Week: December 28, 1998 - January 3, 1999

Eugene Linden, "The Future in Plain Sight" (Program #461)
Broadcast Week: November 23 - 29, 1998

Allen Hammond, "Which World? Scenarios for the 21st Century" (Program #456)
Broadcast Week: October 19 - 25, 1998

Linda Lear, "Remembering Rachel Carson" Part II (Program #452)
Broadcast Week: August 24 - 30, 1998

Linda Lear, "Remembering Rachel Carson" Part I (Program #451)
Broadcast Week: August 17 - 23, 1998

P.J. Simmons, "Environment and Security" (Program #283)
Broadcast Week: December 26 - January 01, 1995

To order a cassette copy of any *Dialogue* program, please call Public Broadcast Audience Services at 303-823-8000. Please have the program number available when placing an order. Each Cassette copy costs $10.95, which includes shipping charges. To learn more about *Dialogue*, please visit their website at http://wwics.si.edu.

24 February 1998

The Environmental Outlook in Central and Eastern Europe: An Intelligence Community Assessment

George C. Fidas, Deputy National Intelligence Officer for Global and Multilateral Issues, National Intelligence Council
Linda Wiessler-Hughes, Special Assistant to the National Intelligence Officer for Science and Technology, National Intelligence Council
Sharon L. Wolchik, Professor of Political Science and International Affairs, George Washington University

Despite small improvements, Central and Eastern Europe (CEE) remains one of the world's largest polluted regions as a result of struggling economies, the legacy of communism, a lack of an environmental consciousness, and fierce competition for limited financial resources, according to a report released by the National Intelligence Council (NIC). This unclassified report was the first in a NIC series of assessments prepared for U.S. senior government officials, outlining trends in East European environmental conditions and identifies issues deemed critical from a United States security perspective. George Fidas and Linda Wiessler-Hughes presented the NIC report at a meeting sponsored by the Environmental Change and Security Project, with Sharon Wolchik, a professor of political science and international affairs at George Washington University providing commentary.

Although more funds are being diverted to the environment, the amount is a paltry sum given the severe environmental disasters in the CEE. Likewise, despite the passing of stricter standards, environmental ministries remain weak and are unable to effectively enforce environmental laws. The economic downturn has considerably worsened any immediate future opportunities for more funding or the ability to better enforce the pollution laws. This inefficiency will in turn affect the feasabilty of CEE countries to meet the standards set for entry into the European Union (EU).

Although, tighter air pollution controls have been imposed on industry, particularly power plants, automobile use is surging, leading to increases in lead, nitrogen oxide, and carbon monoxide emissions. Water pollution is also a grave problem as a result of industrial waste and poor municipal waste disposal systems. The report stresses the increased risk of a toxic waste leak given the region's continued reliance on aging and neglected nuclear reactors.

In addition to the environmental consequences of pollution, public health is also aggravated by the lack of effective pollution abatement methods. Infant mortality rates are higher as are birth defects and are linked to a number of pollutants such as lead, sulfur dioxide, and nitrates. With the rise in cars, health impacts from other pollutants will likely rise also. Additionally, the effect of persistent pollution on labor productivity is growing as workers' attendance drops in direct correlation to rising incidences of illness, particularly respiratory diseases.

There is hope for long term improvement especially given the CEE countries' desires to join the EU. In order to join they will have to improve market reform and hence social and environmental changes will result. But until such time, the CEE countries will continue to adversely be affected by severe pollution. These countries remain major sources of cross-boundary pollution of regional water resources such as the Baltic Sea. The potential for interstate friction will also remain high with the possibility of toxic waster and the lack of safety mechanisms in place for nuclear and hazardous waste sites.

25 February 1998

Population and Environment: Reports from the Field

Julia Cohen, Legislative Representative, Planned Parenthood Federation of America
Lisa Garbus, Consultant, World Bank
Thomas Safford, Doctoral Candidate in Development Sociology, Cornell University
Amy Weissman, Current Fellow, University of Michigan Population-Environment Fellows Program
Frank D. Zinn, Director, Population Fellows Programs at the University of Michigan

On February 25, 1998, several Population-Environment Fellows Program (PEFP) representatives visited the Woodrow Wilson Center to report on their activities with the program. Julia Cohen, Lisa Garbus, Thomas Safford, Amy Weissman, and program director Frank D. Zinn all shared their PEFP experiences.

The University of Michigan Population-Environment Fellows Program (PEFP) was founded in 1993 as a component of the Population Fellows Program. Funded by United States Agency for International Development (USAID), the PEFP has been at the forefront of population-environment activities, providing young professionals with field experience in integrated, inter-sectoral development programs. The Program provides fellowships to qualified individuals who have completed graduate degrees in areas related to population and environment. Fellows are placed in developing countries for two year assignments to provide assistance and technical support to host organizations. Throughout their placements, Fellows observe, participate in, and initiate local programs to link population and environment at the field level. Moreover, they develop new approaches for linkages and learn about both the benefits and constraints of linked activities. The Program has three central objectives: 1) to provide training and international experience to entry-level professionals in population-environmental field work; 2) to provide technical assistance to the organization or agency requesting a Fellow; and 3) to further the development of an integrated approach to population, health, and environmental issues. Fellows are placed with international organizations such as CARE, IUCN-The World Conservation Union, The Nature Conservancy, and Pathfinder International or local agencies such as the Fundación Moises Bertoni (Paraguay). They work on projects designed to address the needs of humans in the context of environmental protection or sustainable resource use. The PEFP supports and improves the capacity of host country institutions to respond to development problems in a comprehensive fashion, while simultaneously developing a cadre of future leaders who have expertise in linking population and environment issues. Fellows are involved in several activities that may include, but are not limited to: linked population-environment service delivery; integrated community-based development programs; gender analysis; buffer zone management; policy analysis and research of population-environment dynamics; and participatory rural appraisal (PRA).

As a University of Michigan Population Fellow, Julia Cohen served in the Office of Population of the Bureau of Population, Refugees and Migration at the Department of State. She assisted the Director in the implementation and monitoring of U.S. population policy, specifically on the issue of Reproductive Health of Refugees (RHR). She became the point person on the integration of RHR into relevant health services, and helped overseas organizations incorporate RHR services into their policies. As co-chair of the Reproductive Health for Refugees Working Group, she organized regular meetings of USAID, State and NGO [nongovernmental organization] officials to discuss the issue. As a representative of the Bureau, Ms. Cohen traveled to Zaire and Tanzania to monitor refugee reproductive health, visiting camps and meeting with government, UN [United Nations], Red Cross, NGO and other officials to discuss and assess RHR services in those regions. She also met with NGOs in Geneva and Rome to discuss follow-up to the International Conference on Population and Development and the Fourth World Conference on Women.

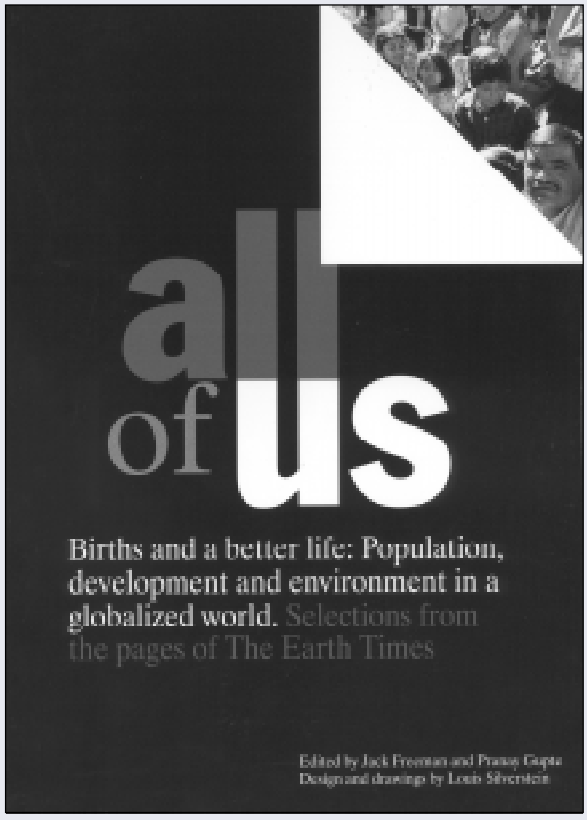
As a University of Michigan Population-Environment Fellow (1994-96), Lisa Garbus worked with the International Union for the Conservation of Nature (IUCN) on a project called GEPRENAF that focused on the community-based management of natural resources and wildlife. Ms. Garbus helped design and monitor indicators to measure the flow of project benefits to all sections of the community, primarily through the use of village-level surveys. She also created and managed a women-population-environment initiative that examined the impact of environmental degradation on family health and demographic decision making. In addition, she assisted IUCN in a collaboration with UNICEF focused on primary environmental care (PEC) which involved community training, capacity building and awareness-raising activities

As a University of Michigan Population-Environment Fellow (1995-97), Thomas Safford was instrumental in establishing a partnership between Pathfinder/ Brazil and two local environmental NGOs: Funatura and Jupara. These partnerships allowed Pathfinder to introduce community-based health care and family planning services in two previously under-served rural areas.

The projects resulting from these partnerships received joint funding from the Population and Environment Offices of the USAID Mission in Brazil. The primary objective of the two linked projects was to integrate a population/reproductive health component into ongoing environmental/conservation projects. The Jupara-Pathfinder partnership has attempted to address the lack of reproductive health services in southern Bahia. Project activities include the analysis of existing health services, particularly women's health services as well as training sessions on methods for providing health, hygiene and family planning information to local residents. The Funatura-Pathfinder partnership has focused on the provision of health and family planning services to communities living around a protected area, the Grande Sertao Veredas National Park. Project activities include the development of strategies for family planning service delivery in this rural area as well as activities to raise awareness about the links between conservation and health and the sustainable use of resources.

As a current Population-Environment Fellow at the University of Michigan, Amy Weissman serves as Coordinator of the Population Initiative's Small Grants Program at the World Wildlife Fund (WWF). She develops publicity, reviews proposals, monitors grant projects and coordinates the selection of field projects. Ms. Weissman also provides technical assistance and training to field programs in the area of reproductive health and gender. She is helping to build partnerships between WWF and international reproductive health/population organizations. She is currently planning a Population/Gender Workshop and drafting a Population Resource book in addition to coordinating the Small Grants Program.

Dr. Frank Zinn is the Director of the Population Fellows Programs at the University of Michigan. The Fellows Programs places early career professionals in developing countries to work with organizations addressing population, development and environmental issues. He is Associate Professor of Urban and Regional Planning at Michigan State University, where he teaches and conducts research on planning methods, and international dimensions of urban planning. In addition to his academic work, Dr. Zinn has consulted with a number of international organizations including the World Bank, the UN Development Programme (UNDP), the UN Fund for Population Activities (UNFPA), and Indonesia's National Development Planning Board (BAPPENAS).



All of Us—Births and a Better Life: Population, development and environment in globalized world is a new publication from Earth Times Books, the publisher of the periodical, *Earth Times*. This new volume is a compilation of past articles from the magazine edited by Jack Freeman and Pranay Gupte with a forward by Nafis Sadik, director-general of the United Nations Population Fund. Some of the articles included are, "The Impact of Population on the Environment" by Mohammed T. El-Ashry, "Covering the Human Environment" by Seymour Topping, " "Restoring the U.S. Leadership in Population Policy" by Steven W. Sinding, and "What to do About Climate Change" by Sir John Browne.

12 March 1998

Environmental Security, State Failure in Africa, and Democratic Transitions: New Results from the State Failure Task Force

Daniel C. Esty, Director, Yale Center for Environmental Law, and Professor, School of Forestry and Environmental Studies, Yale Law School
Jack A. Goldstone, Professor of Sociology and International Relations, University of California, Davis
Ted Robert Gurr, Distinguished University Professor, University of Maryland, and Steering Committee Member, Conflict Early Warning Systems Research Program, UNESCO's International Social Science Council
Barbara Harff, Professor of Political Science, U.S. Naval Academy
Marc A. Levy, Visiting Professor, Department of Political Science and Department of Environmental Studies, Williams College

Countries whose transitions to democracy are likely to succeed have lower infant mortality rates, greater openness to international trade, a higher level of urbanization, and some prior elements of democracy, according to the *State Failure Task Force Report: Phase II Findings*. This report is the second that comprehensively details findings from the State Failure Task Force, a group formed in response to a request from U.S. policymakers to identify factors associated with serious internal political crises. *[Editor's Note: See the Special Reports section for excerpts of the Phase II results.]* The results of this report were presented by the authors at a meeting sponsored by the Environmental Change and Security Project on March 12, 1998.

The second phase of the report built upon the work of the first phase, including refining the global model with new up-to-date data. This update and new analysis included looking at "partial democracies" or governments that have a mix of autocratic and democratic features; a form of government left out in the first phase. The second phase also examined the stability of transitions to and from democracy and developing new models and results of the role of environmental factors in state failure.

However, the largest new features of their second phase work were a variant of the global model that was designed to anticipate state failures in Sub-Saharan Africa and a pilot study using event data. The refined model showed that the level of trade openness, the level of democracy, and changes in material living standards plus the additional dimensions of the urban share of the population, type of colonial heritage, and the presence of ethnic discrimination, produced a model that accurately classified two-thirds of historical cases as stable or as state failure. In the Africa model, the authors found that good environmental data is still lacking for many variables and regions. Regardless, the data suggested that while environment matters, efforts to track environmental factors that may affect political stability need to be complemented by an assessment of a country's vulnerability and its capacity to deal with environmental degradation.

The authors asserted that the findings of Phase II indicated several areas where potential future research should be conducted. These areas included obtaining a better understanding of the factors that ensure a successful democratic transition; improving environmental data, by combining currently available data in new ways and by developing a core set of indicators that could support future analyses; further developing the concept of "state capacity" as a mediating factor in general and regional models; investigating the impact of international support on the risks of state failure; and further investigation of the usefulness of analyzing daily events, in conjunction with background factors, to track the immediate precursors of state failure.

15 April 1998

Environmental Issues in Eastern Europe: Assessing Conditions and Strategies

Remarks by Joan DeBardeleben, Director, Institute of Central/East European and Russian-Area Studies, Carleton University, Ottawa, Ontario, Canada

Environmental challenges in Eastern Europe are complex in cause and consequence, posing short-term crises and long-term toxic legacies. The effects of environmental degradation are manifest in sudden disasters (such as the radioactive poisoning of the Chernobyl explosion) and also in the long festering health impacts of airborne particulates on life expectancy. Social, economic and political factors have worked in concert with environmental degradation to present a massive set of challenges to populations and governments in Eastern Europe. The poor state of the environment in the region is one of the communist industrial and political legacies that present an additional burden to economies in transition. To better understand the dynamic set of environmental challenges facing this region, the Woodrow Wilson Center convened a conference entitled "Environmental Issues in Eastern Europe: Assessing Conditions and Strategies." Understanding the magnitude and extent of the problems is the first step to coordinated and effective response by East European governments and peoples as well as interested Western governments and aid agencies. The following remarks by Joan DeBardeleben, Director, Institute of Central/East European and Russian-Area Studies, Carleton University, Ottawa, Ontario, Canada provide an overview of the presentations at the meeting. For the full set of presentations, please visit the ECSP web site at http://ecsp.si.edu/ecsplib.nsf/REPORT?OpenView&Start=1&Count=30&Expand=7#7.

Beginning in the 1980s, there was a growing and widespread recognition that environmental problems would present an enduring challenge to the states of Central and Eastern Europe. Now, some seven to eight years after communism, one can set a framework for examining the way in which that environmental challenge looks. How did we understand the challenge before the collapse of the communist system? What have the transition years shown us about the nature of the problems and our understanding of them? Are the solutions we hoped for earlier realizable now? Are there new unforeseen challenges? A reminder of some of the underlying aspects of the problems as these states emerged from the communist period aids in this examination.

The legacy of the Soviet model, while differing from country to country (particularly depending on natural endowment and level of development), imposed a pattern of rapid industrialization which created highly polluting sectors. Particularly hard hit were some regions with a heavy concentration of polluting industries, such as those with shale or strip mining, nuclear hazards, or intense water pollution. Northern Bohemia and the Black Triangle, the Kraków region in Poland, Upper Silesia and Rybnik (Poland), northern Estonia, and brown coal mining areas in several countries are but a few.

Many countries relied on low quality, highly polluting energy sources (coal, nuclear power), since indigenous sources of less polluting materials were scarce, except in Romania. In addition, there were high levels of energy waste due to the underlying incentive structure characterizing the economic systems of the communist period. The system of incentives in the communist system also led to wasteful production (and associated pollution) in other sectors as well. However, the communist leadership generally treated these problems as low priorities. In addition, the communist regimes maintained strict control of information about pollution and restricted the ability of both scientists and the public to exercise a watchdog function. The degree of restrictions varied from country to country.

Conventional wisdom in the late communist period viewed market reform and democratization as something of a panacea. The market was seen as encouraging efficient use of natural resources, including energy. Through this and effective use of economic incentives, the market would allow a reduction of pollution. Decentralization of political power would permit local authorities to respond to immediate environmental problems. Liberalization of the media and formation of independent environmental organizations would make the government and industry more accountable to the public.

Have these expectations been borne out? Did we read the challenge correctly? Or are there other dimensions to the challenge that we did not foresee? Indeed there are. The problems have turned out to be more complex and resistant to resolution than had been expected. This is not only due to the intensity of the pollution legacy but also because the impact of reform processes have themselves produced ambiguous results.

The market has produced a more complex matrix of consequences than expected. Even under the best of circumstances, the market has mixed effects because it encourages enterprises to externalize costs, encourages consumer demand for heavily packaged disposable goods, makes long-term planning difficult, and requires an effective system of regulation and monitoring to balance

the pressures to externalize.

Indeed, some countries in Eastern Europe, notably Poland, have made considerable progress in trying to introduce economic incentives for the reduction of polluting activities. Some of these incentives are fines for pollution, emission charges, higher prices for natural resources, and the selective introduction of tradable emission permits: the polluter pays principle. Environmental liability in the privatization process and environmental funds (Czech, Hungary, Poland) have been accepted to a large extent in many of the Central and East European countries.

However, the larger economic and political context reveals obstacles to the effective functioning of these types of economic regimes. Although some polluting enterprises have been closed down, there is often a reluctance to do so because the social and political consequences could be destabilizing. If this reluctance continues, then economic incentives will not work when they threaten the bottom line. In addition, the regulatory structure is weakly financed and staffed. Therefore, the ability of these agencies to enforce the incentives adequately is weak; moreover, business interests may have more clout than weak citizen groups. Investment funds for technical improvements are also inadequate; thus, threatened penalties for not introducing ameliorative measures are not viewed as realistic. Furthermore, a real market does not yet exist in all spheres; therefore, hard budget constraints are not yet operative. However, many of these factors may be transitory and can be overcome. Western technical assistance can aid in this by helping construct regulatory regimes which are more effective and by providing incentives for investment in progressive technology.

In the political sphere, have democratization and possibilities for decentralization of power raised the priority of environmental issues and created a better chance for environmental monitoring? Undoubtedly so. The number and scope of activities of environmental NGOs [nongovernmental organizations] has expanded greatly. Nonetheless, the issue ranks relatively low on the priority scale of most citizens. Decentralization has imposed bitter choices on local authorities and has not been accompanied by a significant reallocation of resources to the environmental sphere. This is a significant problem, given the large scale of industry in some areas and the dependence of particular communities on the polluter.

An important priority that is recognized in some countries (i.e., Poland) is environmental education. The importance of environmental education is less clearly understood in some other countries. Public discussion of choice in social values is essential. Also important is the provision of technical capabilities for the gathering and sharing of environmental information among specialists to create a broad-based environmental monitoring system which can be linked to NGO activity. Better dissemination of information about the long-term health impact of environmental choices, particularly among the younger generation, can have a lasting impact. Survey work has shown, however, that at least in the early to mid-1990s environmental knowledge among citizens in the post-communist countries was lower on average than in most Western countries.

With the collapse of the communist system, new challenges have also emerged. With the Soviet Union no longer acting as the inter-regional policeman, resolution of cross-boundary issues has taken on heightened importance. This involves issues like the Black Triangle, the Gabcikovo-Nagymaros Dam Project (suspension in Hungary, but support in Slovakia), and the controversy surrounding the development of the Temelin nuclear plant (Czech/Austria).

In other cases, problems which existed in the communist period have continued to exert a powerful impact, particularly when these problems are rooted in geographical or economic realities. For example, most of the countries in the region continue to rely on indigenous energy resources, in some cases to a greater extent than previously, as trade links to energy-rich Russia have deteriorated and gas imports have become more expensive.

Some of the most promising routes to address the new challenges include regional initiatives supported by neighboring western countries, pressures to meet the environmental standards of the European Union, and programs of international assistance directed toward regional cooperation. In the medium term, one can hope that the economic crisis abates, allowing more attention to be devoted to the environmental question. In the longer term, the states of Central and Eastern Europe will have to struggle with the same difficult choices that face the more advanced industrialized nations. Market mechanisms and democratic political structures provide tools which can be utilized by environmental activists to achieve their goals, but they offer no automatic solutions.

Below is a list of topics and speakers at the conference:

Overview of Environmental Conditions in Eastern Europe
Geoffrey D. Dabelko, Director, Environmental Change and Security Project

Understanding the Challenges: The Environment in Eastern Europe
Joan DeBardeleben, Director, Institute of Central/East European and Russian-Area Studies, Carleton University

The Environmental Legacy of Soviet Bases in Eastern Europe
Joel Tumarkin, Research Staff Member, Institute for Defense Analysis

The Environment and Health in Eastern Europe: Exploring the Links
Patricia Billig, Senior Technical Advisor, Environmental Health Project, Camp Dresser & McKee International

Energy in Eastern Europe: Crisis and Opportunity
John R. Lampe, Consulting Director, East European Studies, Woodrow Wilson Center

Energy Issues in Eastern Europe
John M. Kramer, Professor, Department of Political Science and International Affairs, Mary Washington College

Energy Efficiency in Bulgaria
Zdravko Genchev, Executive Director, Bulgarian Foundation for Energy Efficiency (EnEffect), Sofia

Institutions, Regional Cooperation, and the Environment
John R. Lampe, Consulting Director, East European Studies Program, Woodrow Wilson Center

European Union Accession and Regional Environmental Programs
Margareta Stubenrauch, National Expert to the European Communities, European Commission Directorate-General XI (Environment, Nuclear Safety and Civil Protection), Brussels

Environmental Activism in Eastern Europe
Robert M. Ponichtera, Research Associate, East European Studies, Woodrow Wilson Center

The Business Contribution to Environmental Protection in Eastern Europe
Stanley J. Kabala, Professor, Environmental Science and Management Program, Bayer School of Natural and Environmental Sciences, Duquesne University

Environmental NGOs in Central and Eastern Europe as Agents for Change: The Role of the Regional Environmental Center
Winston Bowman, Deputy Director for Programs and Information, Regional Environmental Center for Central and Eastern Europe, Szentendre, Hungary

Supporting Environmental Projects in Eastern Europe
Marianne Ginsburg, Senior Program Officer, German Marshall Fund

8 May 1998

Population and the Environment: NGO Activities and Future Challenges

Marcia Brown, Director of Foundation Relations, Pathfinder International
Patrick Coleman, Deputy Director, Center for Communication Programs, John Hopkins University School of Hygiene and Public Health
Robert Engelman, Director, Population and Environment Program, Population Action International
Roger-Mark De Souza, Population-Environment Coordinator, Population Reference Bureau

The second in a series of sessions on current population activities, this discussion group meeting provided an informal update on population-environment activities of leading population non-governmental organizations (NGOs). Speakers made brief presentations on the population and environment activities of their particular organization before turning to an open discussion with all participants. These update style meetings are intended to foster dialogue among multiple actors within the population community, and across expert communities outside the population field.

Pathfinder International, according to Director of Foundation Relations Marcia Brown, provides a broad range of family planning and reproductive health services, from contraceptive services to HIV/AIDS information to prenatal and well-baby care. Brown drew attention to Pathfinder' partnerships with local health care workers in numerous developing countries around the world. These local health care providers commonly work for local NGOs that have founded partnerships with Pathfinder International in order to provide quality family planning and to increase

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13 May 1998

Rachel Carson: The Fountainhead of the U.S. Environmental Movement

Linda Lear, Research Professor of Environmental History, The George Washington University and Research Collaborator, Office of Smithsonian Institution Archives

Linda Lear presented ideas from her critically acclaimed biography *Rachel Carson: Witness for Nature* at a May 13 Wilson Center noon discussion. A documentary film about Carson's pioneer book *Silent Spring* enlightened the audience not only about the fight to make people aware of how dangerous the widespread and unchecked use of the pesticide DDT is to nature but also the long-range consequences of ignoring the human impact on ecology. In her book, Lear examines the depth and impact of Rachel Carson's struggle to galvanize a movement for nature and ecology in the 1950s and 60s, and why Carson met with so much resistance.

Carson's talents as a biologist and her ability to communicate facts in prose that people could understand set her apart from others trying to call attention to the need for humans to view themselves within the constraints of nature rather than humans taming or trying to control nature. Her warnings and insight into the modern destruction of the environment by harmful chemicals and those who produce and sanction them became controversial but accepted as they built on her earlier best sellers *Under the Sea Wind* and *The Sea Around Us.* Her detractors in the agricultural and chemical manufacturing fields, as well as some government scientists, attempted to deflect the attention they were getting by casting aspersions on Carson. Some said because she was a woman and a bird-lover, she could not present reliable information. Others said that to be against pesticides was to be for the Communists. At the same time however, President John F. Kennedy took careful note of Carson's findings and launched the President's Scientific Advisory Committee in 1962 to further explore the ramifications of pesticide use. Supreme Court Justice William O. Douglas later called *Silent Spring* the most enlightening book of the century.

First published in 1962, *Silent Spring* is still selling over 27,000 copies a year. Lear noted however that Rachel Carson is not well known among younger generations in America, in part due to Carson's untimely death only two years after the publication of *Silent Spring*. Through her biography of Rachel Carson, Lear hopes to keep alive the spirit and cause of the pioneering witness for nature.

resources. Roger-Mark De Souza, Population-Environment Coordinator for the Washington-based Population Reference Bureau (PRB) stressed the role of PRB as an educational organization engaged in research and policy analysis, media outreach, and providing technical and information services on population matters. Patrick Coleman, Deputy Director at the Center for Communication Programs, Johns Hopkins University School of Hygiene and Public Health, described the Center's extensive participatory population education projects in Asia, Africa, Latin America, and the Near East. Population Action International (PAI), according to Robert Engelman, Director of Population and Environment, promotes a stable world population through its research and publications. Engelman called attention to PAI's 1998 publication, *Plan and Conserve: A Source Book on Linking Population and Environmental Services in Communities* for examples of the tangible benefits of projects that successfully integrate family planning and environmental objectives. *[Editor's note: See the New Publications section for a review of Engelman's* Plan and Conserve*]*. Each speaker stressed a number of common themes: 1) the need for continued public outreach and education; 2) the need for increased cooperation among NGOs working on population and the environment; and 3) the need for demonstrating linkages between environment and population challenges and responses.

15 June 1998

The Role of the Environment in the Asian Crisis

James Clad, Professor of Southeast Asian Studies at Georgetown University's School of Foreign Service
Kirk Talbott, Senior Director for the Asia and Pacific Region at Conservation International

An economic crisis grips much of East and Southeast Asia, causing political turmoil and raising prospects of an uncertain future in areas which until recently were considered paragons of economic growth. Among the interesting questions raised by this unforeseen crisis is the role of the environment in precipitating the crisis, as well as whether the financial crisis is spurring environmental benefits or exacerbating regional rivalries. In order to explore these questions, the Environmental Change and Security Project hosted a discussion group meeting, featuring James Clad, Professor of Southeast Asian Studies at Georgetown University's School of Foreign Service, and Kirk Talbott, Senior Director for the Asia and Pacific Region at Conservation International. Four focus questions framed the discussion. First, have environmental problems in Southeast Asia exacerbated state instability, thereby further eroding the ability of Southeast Asian governments to respond effectively to the financial and political crises? Second, have the financial and political crises provided direct environmental benefits from reduced consumption and production rates, and will possible political and economic reform to address cronyism and corruption continue these benefits? If the financial and political crises accelerate democratic reforms, is a heightened interest in quality of life issues and civil society likely to bring environmental benefits? And finally, are latent rivalries in the region and in individual countries likely to be rekindled by the economic difficulties and political changes, and if so, could these tensions be exacerbated by environmental problems?

James Clad traced two ways in which awareness of environmental issues became a concern of Southeast Asian governments. The first was through bureaucratic implementation, dating back to the Stockholm Conference in the early 1970s, which incorporated government committees and bureaucratic instruments. The second dated from the 1980s and stemmed from Western donors setting conditions on their aid in order to secure environmental improvements. He also noted two trends, which limit the permanency of environmental agendas in the region. First, environmental problems manifested in discrete areas are frequently pigeonholed as "ethnic" or "local" concerns with little broad significance. Secondly, the Asian leaders view environmental concerns as the priorities of Western non-governmental organizations (NGOs) and think they represented a form of Western imperialism. Prescribed environmental measures met Western needs and do not correspond with Asian priorities. Thus, the political centers in Asia are more likely to disregard both acute local concerns and Western demands. Occasionally, however, disasters of significant scope force regional politicians to address environmental issues. As examples, Clad listed severe flooding in Thailand and the Philipines in the late 1980s, and the troubling forest-fire haze in Indonesia and Malaysia in 1997. Unlike many other issues, both of these issues provoked enough public anger to create a strong constituency that pressed for environmental action.

Clad noted that while environmental problems have exacerbated instability in Southeast Asia, the states in the region are primarily weak nations, highly centralized with the military as the only central institution. Hence the current instability may lead to responsible decentralization. Nevertheless, the short-term instability is definitely having a negative effect on the environment. He noted that the economic crisis may lead states to sell off natural resources at a higher rate. Clad did acknowledge some hope that the regional nature of the crisis may lessen demand and lessen the depletion of resources. Clad assessed the environmental effect of the political and economic crisis by drawing upon examples in South Asia. While Bhutan is an authoritarian state and Nepal is democratic, Bhutan protects its environmental resources (forests) better than Nepal. This pattern is not uncommon in democratic, revenue-driven states that see little advantage in protecting resources when facing severe development challenges. Democracy, therefore, is not automatically going to result in an improved environmental record. As for whether environmental issues can exacerbate existing tension, he noted that Thai, Filipino, and Malaysian gunboats frequently exchange shots over fisheries.

Kirk Talbott focused primarily on "green" issues such as deforestation, but he cautioned that "brown" issues or industrial pollution also pose extremely grave problems in the region. Referring to a matrix of forestry conditions in three sets of countries in the region, he noted that ironically, the countries with the highest level of accountability (his proxy for democracy) were those with the least amount of forest left. He pointed out that instability and conflict within or among states does not necessarily spare the environment; in fact, conflicting parties in Cambodia and Burma often create cease-fires in order to collaborate on forest plunder. [*Editor's Note: See Kirk Talbott and Melissa Brown's article entitled "Forest Plunder in Southeast Asia: An Environmental Security Nexus in Burma and Cambodia" in Issue 4 of the* Environmental Change and Security Project Report] He noted that the

forest fires in Indonesia were severe enough to have galvanized both local and international attention to environmental problems, yet the corruption, cronyism, and nepotism that was behind the fires remains rampant. He also pointed out the terrible impact deforestation has on biodiversity, as local populations unsustainably deplete resources simply to survive. Talbott stressed that all of these issues are complex and interrelated, and not susceptible to simple, single-sector solutions. He also emphasized the urgency of acting quickly, while the opportunity to take advantage of the sense of crisis lasts. As the region remains in a state of flux, both international and local groups can have far-reaching impacts on environmental prospects for the region.

In the discussion that followed, participants addressed the question of how local polities can hold national leadership responsible for environmental issues. Some noted that for environmental disasters to play a role in the stability of a regime, the events must fit into preexisting myths of government held by the people. If disasters are seen as marking the end of a dynasty, as they are in some Asian societies, then the catastrophes may contribute to pressures on leaders. The extent to which this is true varies greatly between countries, but it is one element that may enable community pressure and NGOs to have a positive influence on Southeast Asian governments.

The demand for energy, and the possibility for meeting this demand with geothermal projects was also discussed. Although not significant, modest growth in the demand for energy has been registered in the region and is expected to increase following the economic crisis. Some also noted the role of energy in exacerbating rivalries such as those among China, Laos, Vietnam, Thailand and Cambodia over proposed dams on the Mekong River.

Other participants noted the debate over the window of opportunity for action. Only with serious structural shifts in the economy could the overall environmental trends be reversed. While acknowledging the need for fundamental restructuring, others thought it possible to enact some environmental protection through outside pressures. In light of the need to make these structural shifts, debate centered on the effectiveness of various methods of applying political pressure on regional governments. Participants discussed the feasibility of debt-for-nature swaps; while some swaps were being contemplated, none had yet been completed. The ability of NGOs and bilateral agreements to be effective also depends on prioritizing and focusing the energies of the players, otherwise the leverage to effect change is lost. Others returned to the democracy and environment debate and stated that political and economic accountability are critical elements of resource management—accountability is a "necessary but insufficient condition." Rather than simply applying economic incentives to negotiations between regional governments and the U.S. government or NGOs, it is incumbent on Western actors to ensure that accountability levels rise in the wake of the crisis.

One participant noted that the financial crisis is pressuring local populations to sacrifice the environment for the sake of short-term food needs. These trends demonstrate the need to develop both short- and long-term strategies. For the long term, nuanced political agendas and conditional aid agreements are important. But equally important is addressing short-term concerns such as giving food aid to reduce pressure on local groups to harvest the last of their trees.

NEW Publication from the Environmental Change and Security Project

Climate Action in the United State and China - Published in May 1999, this 30 page pamphlet in English and Chinese is designed to provide objective information on climate change projects and policies in the respective countries. A joint publication of the Environmental Change and Security Project and Batelle/Pacific Northwest National Laboratory, over 3,000 copies have been distributed to a broad range of international policymakers and climate experts.

If you would like a copy, please visit our website at http://ecsp.si.edu/Climate-brochure or contact ECSP at chinaenv@erols.com.

30 June 1998

Addressing the Related Problems of Environment, Population, and Migration: Opportunities for Institutional and Policy Reform

This workshop brought together key representatives from the U.S. State Department, U.S. Agency for International Development (USAID), nongovernmental organizations (NGOs), academic experts, and foundations, to discuss how best to advance environment, migration, and family health, and women's issues, as well as the development of techniques to monitor, evaluate and upscale integrated programs.

Environmental degradation, poverty, unsustainable population growth, family health, and migration are often closely connected in a complex web of mutually aggravating cause and effect relationships. These problems are particularly acute in the developing world, where technical and financial resources are limited, and local institutional capacities are weak. Providing affected communities in less developed countries with the tools they need to meet the challenges of these interrelated problems will be critical if they are to sustain themselves and avert the consequences of famine and migration.

A serious obstacle to meeting this challenge, according to Michelle Leighton of the National Heritage Institute (NHI), is the lack of coordination and integration among aid programs that independently target environmental, population, public health, and economic development needs in affected areas. While there is a growing awareness of the linkages that unite these issues among development agencies, foundations and NGOs, the vast majority of U.S. foreign aid and private donor programs continue to address these issues by parceling out assistance through segregated programs. For example, a donor's *environment program* typically remains separate and distinct from its *population program*, and so on. Such programs typically require recipients to demonstrate success in meeting the goals of only one programmatic area, and this has tended to limit the flexibility of NGOs receiving funds to craft innovative new programs that address cross-sectoral issues. Thus, while there has been much dialogue and rhetoric on the need to pursue cross-sectoral objectives and goals, there are few systems or models that actually encourage success, according to Leighton. Furthermore, there is a dearth of programs in developing countries that address the influence of population and migration patterns on the environment, economy, and family health of affected communities.

Presenter Michelle Leighton described a case study conducted by NHI, focusing on the structure and operation of U.S.-based development programs in Mexico, particularly those of USAID. This presentation followed from previous analysis of Mexico's land and water degradation, loss of biological diversity, poverty, migration, and associated health problems, published by the Congressional Commission on Immigration Reform in December 1997.

A number of development, family planning and environmental groups worldwide are now beginning to design integrative programs that have great potential for success. Specifically, a number of NGO-based development projects undertaken in Mexico in recent years reflect various degrees of programmatic integration, which could provide a diversity of lessons and opportunities for comparative evaluation. In order to have a major impact in developing countries, however, these programs will need to be more broadly supported, adequately documented and, where appropriate, replicated. The challenge will be to provide adequate support for these initiatives and to broaden their application where appropriate.

Portions of this summary are drawn from "Addressing the Related Problems of Environment, Population, and Migration: Opportunities for Institutional and Policy Reform," a joint report on this conference by the Natural Heritage Institute and the Environmental Change and Security Project. In addition to the NHI presentation, other presentations at this conference were:

Opportunities for Integration and International Partnerships: The UN Convention to Combat Desertification and Drought
Franklin Moore, International Program Coordinator, Environment Center, USAID

Opportunities for Innovation: U.S. Foreign Assistance Programs
Duff Gillespie, Deputy Assistant Administrator, USAID

Bringing the Population and Environment Communities Closer Together: A Global Overview
Robert Engelman, Director, Population and Environment Program, Population Action International

Integrating Conservation, Development, and Gender
Marcelo Andrade, CEO, Pro-Natura International

Preventing Involuntary Migration: Training Program in Soils Conservation and Community Health
Clif Cartland, Founder, Proyecto Esperanza, Mexico

Innovations for Upscaling Local Programs to the Regional and National Levels
Michael Brown, President, Innovative Resources Management

Creating a System of Monitoring and Evaluation for Conservation-Development Initiatives
Denise Caudill, Action Learning Coordinator, World Neighbors

Close Up at the Woodrow Wilson Center

This spring, the Woodrow Wilson Center's radio program *Dialogue* collaborated with the Close Up Foundation and *C-Span* on three pilot television programs taped at the Wilson Center. George Liston Seay of *Dialogue* and John Milewski of Close Up hosted the programs and moderated panels made up of current and former fellows, Center staff, and others who have had association with programs or projects at the Center.

The programs were designed for high school students. For each program, the Close Up Foundation brought in an audience of students who participated with their own challenging and thoughtful questions. *C-Span* taped the programs and broadcast each three times.

Left to right: John Audley, Director of International Affairs at the National Wildlife Federation, and Geoffrey D. Dabelko, Director of the Woodrow Wilson Center's Environmental Change and Security Project.

"Global Environmental Politics in the 21st Century" was the timely and appropriate topic of the third and last broadcast in this series of pilot programs. The rapid degradation and depletion of the natural environment is proceeding on a global scale. Despite heightened awareness of environmental problems within public and policymaker circles, the nature of environmental problems make effective, coordinated action to address these problems an ongoing challenge. The program was first broadcast on C-SPAN Friday, May 21, 1999

John Milewski and George Liston Seay co-hosted the program. They were joined by: John Audley, Director of International Affairs at the National Wildlife Federation; Leslie Carothers, Vice President for Environment, Health and Safety at United Technologies Corporation; and Geoffrey Dabelko, Director of the Environmental Change and Security Project at the Woodrow Wilson Center. In addition, an audience of local high school students participated with their own challenging and thoughtful questions about environment and trade, pollution, international conflict as a result of environmental degradation, and recycling.

Ordering Videotapes:
If you are interested in purchasing a copy of a *Close Up on C-SPAN* program, you may do so through the Purdue University Public Affairs Video Archives by calling (800) 423-9630 or by sending a check or money order for $29.95, plus $7 for shipping and handling, to:

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You may also order tapes directly from *C-SPAN* at: http://www.c-span.org/store3a.htm

8 July 1998

The Caspian Sea Region: The State of the Environment and Human Health

Douglas Blum, Associate Professor, Department of Political Science, Providence College
Martha Brill Olcott, Senior Associate, Carnegie Endowment for International Peace, Professor, Colgate University
D.J. Peterson, Resident Consultant, The RAND Corporation and Public Policy Scholar, Woodrow Wilson Center

The rush to extract oil from the Caspian Sea Region has brought renewed policymaker and private sector attention to this center of geopolitical competition and instability. To better understand the environmental and socio-economic conditions in this volatile region, the Environmental Change and Security Project convened a luncheon discussion meeting, entitled "The Caspian Sea Region: The State of the Environment and Human Health" with three prominent experts.

Environmental degradation in the Caspian Sea region is exacerbating underlying socio-political problems and poses a threat to local economies in the region, according to Doug Blum, a professor of political science at Providence College. D.J. Peterson, a visiting Public Policy Scholar with the Wilson Center focused on the challenges of environmental protection inherent in the field while Martha Brill Olcott of the Carnegie Endowment for International Peace emphasized the declining health indicators, a result of environmental problems combined with a depressed local economy. All three speakers cited reasons why environmental degradation is a secondary consideration for the leaders of the Caspian Sea Region nations: a lack of funding and wherewithal to implement effective policies; a lack of awareness of the severity of the degradation on the part of the governments and some segments of the population; and the rapid extraction of natural resources, often a priority of the elite population who have access to top policymakers and can influence policies regarding the depletion of resources.

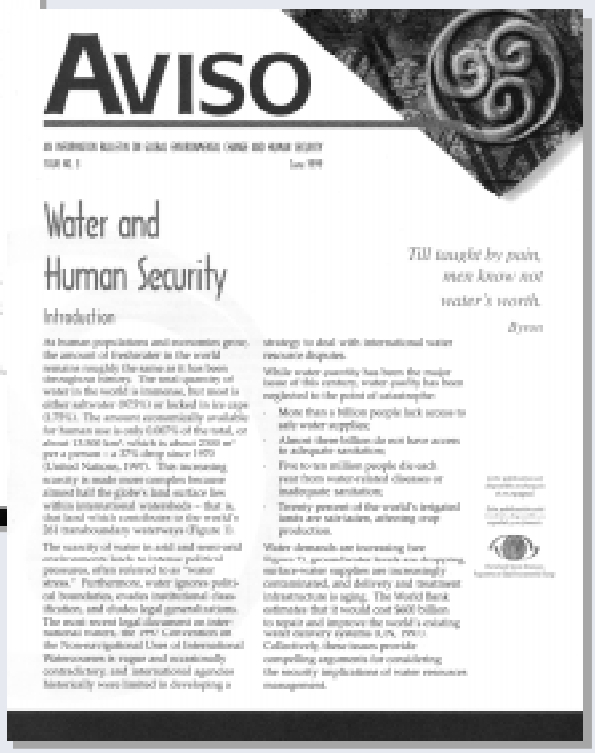
Blum cited three main problems in the Caspian region: water pollution, fishery depletion and sea level rise. Water pollution is a significant problem caused by the dumping of hazardous waste and sewage into the sea. The pollution of the sea, combined with overfishing by small groups extracting as much as they can, have led to serious fishery depletion. Finally, unlike the Aral Sea where the water is receding, the Caspian Sea continues to rise, causing such problems as flooding, displacement of local populations, salinization of aquifers and nuclear waste leaching.

Peterson listed three temporal concerns in the environment sector. Restoring critical fisheries and habitats is a time-consuming process that is extremely complex. Yet reversing damage will improve economic opportunities by creating wealth-generating opportunities for the local communities. This improvement in turn would help reduce population pressures to migrate from rural to urban areas. Where the resources for these strategies will come from is however an unresolved issue. Management of ongoing pollution problems is a second area of priority. The actors involved, from local communities to international nongovernmental organizations (NGOs), must work together to control pollution, improve wastewater treatment facilities, and protect at-risk populations in heavily polluted areas. Finally, pollution prevention presents a third area. Prevention requires advanced environmental technology, technical experts forethought and planning, in countries that are already strained economically.

Sectorally, two areas offer real opportunities for resolving these problems: foreign investment and the civil sector. Given the poor state of existing oil production technologies, foreign investments and foreign aid can make a big difference in environmental performance. One approach is to enforce environmental conditions on loans to Caspian Sea countries. In civil society, two distinct groups can be effective. Local advocates with support from the international community can apply pressure to motivate the public sector at the local level to take a stronger regulatory role; otherwise development and enforcement of regulations are ineffective. Current law is muddled and corruption is rampant, thereby nullifying effective environmental oversight. The development of domestic environmental NGOs, according to Peterson, is a litmus test of civil society development and the durability of democratization in the region. Their vitality is an indicator of societal openness that in turn brings a wider public awareness of the environmental issues.

Olcott directed her remarks to the social problems, particularly the health-education-ecology links. Like Blum, she agreed that the environment takes a back seat when personal circumstances are deteriorating at such an alarming rate as in the Caspian region. Standards of living are decreasing rapidly and the health of local populations, which is already poor, is exacerbated by the declining health conditions. Olcott listed examples of diseases once thought eradicated or previously much less widespread, that are reappearing: tuberculosis, hepatitis, cholera, typhus and even bubonic plague. The poor health care delivery system evident

AVISO, a series of briefing papers on the topics of environmental change and security, is a joint effort of the Woodrow Wilson Center's Environmental Change and Security Project and the Global Environmental Change and Human Security Project (GECHS). The effort is supported by the Canadian International Development Agency and the U.S. Agency for International Development through a cooperative agreement with the University of Michigan.



For a summary of Aviso author presentations at a Woodrow Wilson Center meeting, please visit http://ecsp.si.edu/water-food-security

To view issues of Aviso, please visit http://gechs.org/aviso/

in the region, combined with poor sanitation, has increased the spread of diseases.

Olcott highlighted other problems that pose serious threats to the health and stability of the local populations: a rapid decline of educational facilities; the collapse of the domestic pharmaceutical industry, and an increase in small companies importing drugs but selling them at inflated prices. The large number of refugees and internally displaced people in the region live in the worst conditions as they often must deal with environmental degradation on a far more immediate scale in overpopulated camps with little or no access to the medical and social services.

Blum suggested that environmental cooperation could be the cornerstone for many different types of international collaboration in the Caspian Sea region, offsetting some socio-political tensions. Multilateral governance of environmental issues could potentially promote a broader use of international cooperation in such sectors as infrastructure, development and short-term, limited military exercises. Although the speakers differed in the ways in which a multilateral approach could be useful, all agreed that unilateral or bilateral frameworks were insufficient. By promoting a multilateral, mutually-reinforcing regime that would most likely involve the United States, the Caspian Sea actors could potentially address many different socio-political problems. One participant cautioned, however, that the U.S. role in such matters could be highly controversial. Even though U.S. involvement in such cooperative arrangements can be pivotal, it can alternatively be viewed as anti-Russian and anti-Iranian. Although many participants agreed that while the U.S. role might be viewed negatively by some actors, the United States can play a beneficial role initiating and maintaining cooperation. The role would be beneficial even if it is only to provide the technology and technical experts necessary for such environmental projects.

Participants also examined the role of multinational corporations (MNCs). The panel stressed that when a MNC decides to set up business in the Caspian Sea region, it also invests in the large problems of troubled communities. Under the old Soviet system, the state provided social, educational and health care even to remote rural areas. Today, despite the political and economics changes, the local populations still expect delivery of these essential services whether by government or investors.

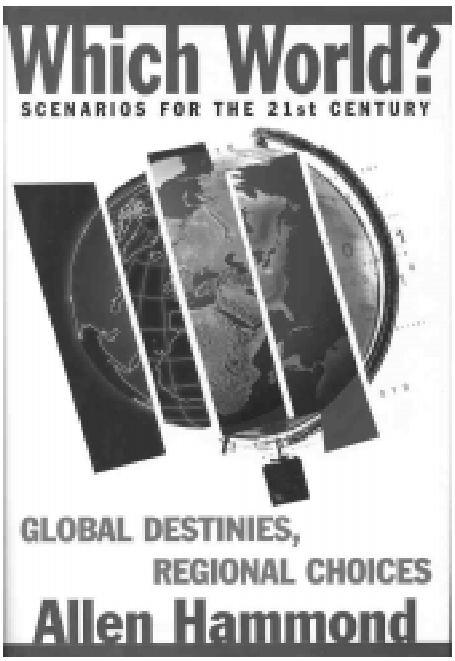
All three speakers agreed that there are specific areas of concern for the environment and for the health of local populations in the Caspian Sea region. These problems will not be solved easily or without controversy and the exploration and extraction of oil will certainly exacerbate these problems. Yet, environment and health concerns were recognized as critical factors in maintaining regional stability.

11 September 1998

Which World? Scenarios for the 21st Century

Allen Hammond, Director, Strategic Analysis, World Resources Institute
Thomas H. Fox, Assistant Administrator, Bureau for Policy and Program Coordination, U.S. Agency for International Development

What will the world look like in the next century? As the new millennium nears, a great deal of concern has focused on what awaits us in the 21st Century. Few have been able to give insightful outlines to the possible approaching scenarios as well as scientist Allen Hammond, in his new book entitled, *Which World? Scenarios for the 21st Century [Editor's Note: See the New Publications section for a review of this book]*. Dr. Hammond is Senior Scientist and Director of Strategic Analysis at the World Resources Institute, a nonpartisan policy research center based in Washington D.C. Hammond maintains, "As a society, we are like a vehicle rushing forward at high speeds in the dark over uncertain ground with very weak headlights." Hammond believes his book is essentially about fashioning better headlights, metaphorically speaking, by using two distinct tools. One involves a persistent trend analysis, which includes a range of high and low trends, region by region. The second tool consists of scenario analysis based on the underlying components of trend analysis. Hammond states that the scenarios he proposes are plausible, but none certain. To help illuminate an uncertain future, the Environmental Change and Security Project convened a luncheon discussion meeting with speaker Allen Hammond and commentator Thomas H. Fox, Assistant Administrator of the Bureau for Policy and Program Coordination at the U.S. Agency for International Development.



Hammond sketches three possible scenarios: Market World, Fortress World, and Transformed World. Hammond began the meeting by commenting, "Although we cannot predict the future, we may shape it." In this sense, Hammond describes three scenarios, region by region, in the context of five critical trends; (1) demographic, (2) economic and technological, (3) environmental, (4) security, and (5) social and political. Hammond uses these trends to frame the context for the scenarios.

Today, rapidly expanding global markets and democracy are spreading around the world. Social indicators are rising rapidly in many regions throughout the world. In addition, the largest sustained burst of technological innovation in history continues unabated. These trends typify Hammond's Market World. Market World is a scenario in which economic and human progress is driven by the liberating power of free markets and human initiative. It is a world where free markets and global innovation should take care of everything. But as Hammond explains: "We know markets don't take care of everything."

The gap between the developing and developed economies is becoming wider, leading to additional problems such as an increase in illegal migration, and income gaps that make global agreements more difficult to negotiate. The world's population is expected to swell to 9.4 billion by the year 2050. The world is adding one million urban dwellers a week and soon today's 60 cities with populations over one million will become 500. Environmental trends indicate that by the year 2050 energy use will grow by 2.5 times, with China's energy usage alone, likely increasing by 600 percent. Energy trends may well pose a threat to air quality since an increase in coal burning leads to an increase in particulate concentrations. Ecosystems of the world also are under stress from degradation, resource scarcity, and the diversion of resources to cities. Biological impoverishment and the associated human impoverishment may increase the potential for resource conflicts. Some social trends are alarming as well. Worldwide, divorce rates are rising. Stress on traditional cultures brings less self-confidence when dealing with problems.

Put all these disturbing trends together and Hammond arrives at a second scenario, the Fortress World. Fortress World is a vision of the future, in which unattended social and environmental problems diminish progress, dooming hundreds of millions of humans to lives of rising conflict and violence. It is a world with conflict between the rich and poor, widespread environmental

degradation, rising social instability, and potential for violence and chaos. Hammond explains that, "In essence, it is a world with islands of prosperity, surrounded by oceans of poverty and despair."

Hammond's third scenario is the Transformed World. Human ingenuity and compassion succeed in offering a better life, not just a wealthier one, while seeking to extend those benefits to all of humanity. Some current trends offer hope and a basis for this third scenario. Literacy rates increased more rapidly in developing countries in the last 30 years than ever before in the industrialized world. Rapid changes in social attitudes are occurring as well. The use of contraception has increased from ten percemt to 50 percent in developing countries. In addition, technology can give new options to people at startling speed. Even global corporations are beginning to understand that they have social and environmental responsibilities. These changes are supported by the rise in civil society.

In comparing the three possible worlds region by region; Hammond highlights critical choices that societies face. Hammond explains that while the industrialized countries command the technology, have the majority of financial resources, and are stable democracies under rule of law, they should not turn away from the problems of the developing world. The developed nations are in the midst of a debate in which they may choose to turn inward and build walls between themselves and their poorer neighbors. Hammond believes this practice would be a grave mistake. Our shared global destiny depends on choices made separately in different regions. The world is increasingly linked; environmentally, financially, by diseases, and security. Therefore, developed nations have a huge stake in what happens in developing regions.

Commentator Thomas H. Fox of USAID noted that the scenarios Hammond discusses for the 21st century are fundamentally important to the choices our society and government makes. As an aside, Fox commented that Hammond's work demonstrates the importance and utility of think tanks. "Hammond presents a serious analysis of the trends and reasonable projections of what these trends might do as they synthesize. For instance, Hammond's market world is very much in the news with the Asian financial crisis and is clearly a dominant scenario among possible scenarios."

22 September 1998

The Role of the World Health Organization in the Coming Millennium

THE HONORABLE GRO HARLEM BRUNDTLAND, DIRECTOR-GENERAL, WORLD HEALTH ORGANIZATION (WHO)

[Editor's note: Following is the text of Dr. Brundtland's remarks at a luncheon hosted by the Environmental Change and Security Project. Dr. Brundtland addressed the linkages between health and environment on her first official visit to the United States as the new director-general of the WHO. The program also included opening remarks by The Honorable Donna E. Shalala, Secretary of the U.S. Department of Health and Human Services; Ambassador Sally Shelton-Colby, Assistant Administrator, Bureau for Global Programs, Field Support, and Research at the U.S. Agency for International Development; and Dr. Thomas E. Lovejoy, Chief Advisor on Biodiversity to the President of the World Bank.]

Ladies and Gentlemen, you really have a wonderful Secretary of Health in this country. It's always a great pleasure to be with her and to listen to her. Secretary Shalala, members of Congress, Excellencies, ladies and gentlemen, I am pleased to be a guest of the Woodrow Wilson Center and its Environmental Change and Security Project. Its mission, to act as a forum for discussing the linkages between population, environment, health and security issues, is a critical one. I feel in many ways that I have spent much of my time on these specific linkages, and trying to understand them. Also, Ambassador Sally Shelton Colby deserves our thanks for funding this project. Let me also congratulate an old friend, Congressman Lee Hamilton, who has been named to be the next director. I really appreciate being here today, also for that reason. It is honor to be here, and to be given the opportunity to share with you some of the challenges ahead for world health, and some reflections on how WHO can make a difference. I should also mention Dr. [Harold] Varmus [Director, National Institutes of Health] and Secretary Shalala; I appreciate seeing people with great commitment. I know that many of you in this hall are here because you are committed, and that we will be working together to focus on world health. I see real allies around this room in the struggle for better health across the world. The world really needs such dedicated and forward-looking people, because there is so much that needs to be done and there is so much that we can do.

Gro Harlem Brundtland

The agenda of WHO is a broad one. We are engaged in a wide variety of activities. It's a small organization, compared with its daunting mandate. Its constitution reads: "The objective of the World Health Organization shall be the attainment, by all peoples, of the highest possible level of health." It is clear, as it is comprehensive, and the sense of it all is a call for equity. When I took office on July 21st, I pledged to make WHO more focused, ready to engage fully where it is at its best, and ready to say that we should not engage when others can do it better or when we simply cannot do all. We have to continue our fight against communicable diseases, which still haunt the world, especially the poor. We are engaging across a broad spectrum, and many gaps that we see between rich and poor are at least as wide as they were half a century ago, and some of them are even widening between nations and within nations. So while in most countries people live longer, life expectancy is decreasing in some others. Between 1975 and 1995, 16 countries, with a combined population of 300 million, experienced such a decrease. To many people this is surprising. Many of those countries are African countries, and recently even European countries experienced a reduction in life expectancy.

The first World Health Assembly, in June of 1948, listed its top priorities in the following order: malaria, maternal and child health, tuberculosis, sexually transmitted diseases, nutrition, and environmental sanitation. Looking at it today, we see that they are all critical issues we have to deal with. Malaria is hitting back again, killing 3000 children every day, especially in Africa. In defining the Roll-Back Malaria Project of WHO, we will do all we can to learn from the successes and failures of the past, and mount a realistic combat to significantly reduce morbidity and mortality from malaria. WHO was created 50 years ago, and the founding fathers and mothers knew perfectly well, even then, that there are no health sanctuaries. The suffering of the many must be a common concern in an interdependent world.

We also have to mobilize in our fight against the non-communicable diseases too well known in the North, but now spreading like an epidemic in developing countries. We have to look ahead to grasp the changing time, ready and able to give the best advice on aging, on mental health, and on the environment, as well as new challenges from injuries and violence. As much of the world steps confidently into the future, it cannot, must not, ignore the plight of those in danger of being left behind. More than one billion people live in extreme poverty, a condition of life characterized by malnutrition, illiteracy, and ill health; a

condition of life beneath any reasonable definition of human decency. In the balance sheet of our century, inequality remains one of the largest social debts, but it need not be that way. We have the evidence that investing in health yields tangible results.


Donna E. Shalala

Healthy populations help build healthy communities and healthy economies, and we need to bring this message to political decision-makers, to presidents, prime ministers and finance ministers. I believe since the future is owned and shared by the many, and not by the fortunate few, it must be for the poor, most of all, that WHO pledges itself to make a difference. WHO however, cannot do it alone, nobody can do it alone. We are, in one way or another, in it together. So that is why WHO will have to reach out to the other UN agencies; United Nations Children's Fund (UNICEF), United Nations Development Programme (UNDP), United Nations Population Fund (UNFPA), and the World Bank, International Monetary Fund (IMF), and the World Trade Organization (WTO). And these three last ones are not less important than the first I mentioned. That is why we have to reach out to civil society and to NGOs, why we have to reach out to the private sector, to private industry, and mobilize together the immense creative potential for innovations.

I have called a number of roundtable meetings with industry. There may be areas, certainly, where our views differ, but I believe in open dialogue and in the search for opportunities, because there is so much that we can achieve together. Take the critical area of immunization that the Ambassador was mentioning on polio, for instance. WHO will put renewed emphasis on its efforts to forward immunization, and to engage in a partnership with other agencies and the private sector to stimulate research towards breakthroughs. In recent years, some have questioned WHO's leadership role in this field. Some have even argued for the creation of a new body to coordinate vaccination efforts. I believe that would be a mistake. My attitude is simple. An organization has to earn its leadership and that is what we are ready to do. WHO is the lead agency in health, with firsthand knowledge of the anatomy and burden of the world's communicable diseases. Not by saying that we will do all, but by forging a new working relationship with our partners, providing our strengths and drawing up on the strengths of others. I pledge to demonstrate that WHO can make a real difference in this area.

Time does not allow me to cover the whole agenda, and so today I wanted to focus mainly on one issue, one health challenge that may become the source of the world's single biggest burden of disease a few years from now. An epidemic that challenges our ability to work beyond the health sector alone, and mobilize a broader community of stakeholders. I want to talk to you about tobacco. The starting point is as simple as it is daunting. Today, three million people die from tobacco-related diseases. That number is likely to grow to ten million in 2010, half of them dying in middle age, not old age. I would like to repeat to you what I told the World Health Assembly in May. I chose to say it this way: I am a doctor, I believe in science and evidence. Tobacco is a killer. We need a broad alliance against tobacco, calling on a wide range of partners to halt the relentless increase in tobacco consumption. Children are the most vulnerable. Habits start in youth. The tobacco industry knows it, and acts accordingly. Our message is clear: tobacco should not be subsidized, glamorized, or advertised.

Some of you have spent your life preventing and fighting the effects, and finding cures against, communicable diseases. Smoking is a communicated disease. The allure of smoking is communicated through advertising and through peer pressure. The price is paid in lost health and lost lives. The bill for the health damages of tobacco is sent to the taxpayer. That is why the legal settlement in the Minnesota case is so important. The facts are there. It is acknowledged that taxpayers end up with a bill, and that compensation is due. And most importantly, the tobacco companies' promotion and their strategies have been successfully challenged and partially curbed. The body of evidence is a library that catalogues, for the people and for the governments of the world, the case against tobacco, its addiction and its harm to health. We must now borrow from that library the facts to press the case against tobacco throughout the world. We must work to galvanize support for tobacco control globally. In governments around the world, the fight against tobacco must be placed in the portfolio of the highest office, in addition to the health ministry; it must be moved up the political ladder, as must the role of health in general. Together we must consider a variety of measures, including the elaboration of a framework convention. We must set examples.

Smoking is spread around the world by the use of creative talents. The creative talents of those who design the advertising campaigns for cigarettes. We must call upon equally as talented people to use the same message to spread the vaccine of facts. We must set examples especially to youth and to women, the targets of the new advertising. Often we have to point to Africa when we talk about health and crisis. I want to point out that the women of Africa have the lowest rate of smoking in the world. They are an example to point to, a treasure to protect. One more thing mothers can do for their babies is not to smoke. But we need a broad alliance. WHO cannot and should not do this alone. We are building a partnership of stakeholders.


Sally Shelton-Colby

Within the UN family, WHO, the World Bank, and UNICEF each has its strengths to play on. The World Bank, through its advice on economics and taxation policies, as well as its direct input into national policies. UNICEF, through its broad approach to the most vulnerable, the children. WHO, with the evidence of what a terrible burden tobacco is about to put on our health systems, and especially the health systems of developing countries. Think of the added cost of the double burden of disease, a lot of it tobacco-related. We will mobilize a range of NGOs, and the real potential of civil society. We will serve as a focal point for groups that organize to fight smoking. We need political pressure, we

need evidence and information. We need action in every village in every country by committed groups of anti-smoking advocates, like we see it here with the group Tobacco-Free Kids, and the media counter-offensive by the American Cancer Society. I have had the great pleasure to watch this twice every morning, and to me that has been the most interesting observation, even in this special time in Washington.

To act globally on tobacco now is truly is the time to act locally. Locally, because that is where young people and youth are to be found. That is why it is so important for those here in Washington, in the administration, and in the Congress to act to prohibit the promotion of tobacco in other countries, and assist in international tobacco-control efforts. I congratulate President Clinton for his actions to instruct U.S. embassies around the world not to promote tobacco and to support local efforts at tobacco control.

We enter a new century in some months, and it offers inspiration and hope. We have every reason to celebrate 50 years of WHO work. The agenda is certainly not fulfilled, but what if I asked another question? Where would the world have been without WHO? Without the UN, without WHO, we would not have been entirely empty-handed to face the future, but our hand would have been terribly much weaker. We are looking ahead. It is not the characteristic, I believe, of health workers, to rest on their laurels. We have to move forward day by day, week by week, and there is so much to do, there is much that we can do. Thank you.

7 October 1998

Environmental Law in China

The Honorable Max Baucus, U.S. Senator (D-MT)

During an October 7, 1998 meeting of the Environmental Change and Security Project's Working Group on Environment in U.S.-China Relations, Senator Max Baucus described his visit to China with President Bill Clinton in June 1998 and shared his thoughts on the environmental challenges facing China. Baucus, a leading proponent of Asian environmental issues in the U.S. Senate, commented on the strength of Chinese commitment to environmental protection and the grassroots support for the environment throughout China. He noted that a stronger rule of law to help enforce environmental regulations and the use of private sector mechanisms to encourage energy conservation and emissions reductions will be necessary for the Chinese to meet their environmental protection goals. Baucus was less optimistic on the likelihood for Congress to open U.S. Agency for International Development, Overseas Private Investment Corporation, or Trade and Development Agency funding for China, but believed that Congressional delegations to China increased knowledge on Capitol Hill about the severity of the problems China is facing. Joining Senator Baucus on the panel for this meeting were Richard Ferris of Beveridge & Diamond, and Zhang Hongjun of China's National People's Congress.

This meeting and all ECSP activities on China are funded by the W. Alton Jones Foundation and the National Oceanic and Atmospheric Administration.

28 September 1998

The Future in Plain Sight: Nine Clues to the Coming Instability

EUGENE LINDEN, CONTRIBUTOR, TIME MAGAZINE
WILLIAM M. WISE, PRESIDENT, THE SORRENTO GROUP, AND FORMER DEPUTY NATIONAL SECURITY ADVISOR TO VICE PRESIDENT GORE

"We are at the cusp of a new phase in history that is coincident with, but not related to, the millennium," according to Eugene Linden and his latest work *The Future in Plain Sight: Nine Clues to the Coming Instability.* Mr. Linden believes that humanity has become a geophysical force. It is the first time in history that all of humanity lives by essentially the same economic rules. We are in the midst of a grand global experiment which may be leading to either a new golden age or a catastrophe. Predicting the future is always risky. Instead, Mr. Linden is exploring possible or likely scenarios based upon long-term trends in climate and human institutions.


William M. Wise

Linden cites stability as fundamental to prosperity. The post-World War II world has been very stable for the bulk of humanity. The stability of this period is unique in human history. For the first time, no major power employs war as a part of its policies. This is largely due to an increase in practicality and the recognition of the high cost of war, and a decline in absolutism. Stability does not have to be ubiquitous to characterize an era as stable. Even though many areas, like Russia, are currently considered unstable, it has been 70 years since the last global depression and 80 years since the last great global epidemic. The global economy thus far has been able to absorb some major shocks, such as the oil crisis of the 1970s, third world debt, and the Savings and Loans debacle, without long-term adverse affects.

Baby-boomers tend to regard this stability as normal. But it may not be so. Linden believes this stability will eventually come to an end. Often stability comes to an end because people cling to outmoded behaviors. The questions that we face now are what will bring its demise and what can we do about it? Mr. Linden's answers focus on those forces over which we have the least control, based on the assumption that we will find solutions to those problems which are easily soluble; they are also technologically neutral and are long-term phenomena.

Linden's nine "clues" to the coming instability are:

1) Hot Tempered Markets: An integrated market was supposed to reduce volatility and instability, but just the opposite happened. The collapse of the Mexican Peso in 1994 and the free-fall of many Asian currencies reveal an inherent volatility in the integrated global market that could bring down the whole system. The synchronicity of investors—their tendency to move en masse in response to changes in the market—and abrupt shifts in institutional capital both create the potential for significant instability, even with existing safeguards. More money in riskier investments creates "bubbles" of growth that are easily punctured. With this higher "event risk," global markets are unstable and prone to sudden collapse. Additionally, treating the symptoms of this problem alone actually makes the problem itself worse. It is not yet clear whether today's volatility is the precursor to a greater debacle in the future.

2) Megacities: The explosive growth of megacities in the developing world could easily create social, political, environmental, and medical disaster. And with the rapidly-increasing integration of the world economy, diseases which incubate in these third-world cities may quickly find their way into developed countries. Growing populations are leading to increased pressure for migration even as less land is available. Populations thus end up in cities, which are subject to overcrowding, poor sanitation, poverty, and disease. Additionally, instability in cities spreads quickly.

3) No "Vent for Surplus": Population pressure creates an impetus for migration not only within nations, but between nations. However, more and more countries are putting out "no vacancy" signs, limiting the potential destinations for emigrants, even as population pressure and environmental degradation force greater numbers of people to move.

4) The Wage Gap: The ever-growing gap between rich and poor cannot continue to widen indefinitely without producing instability. The gap is the result of long-term trends including automation of the workplace, integration of the global economy, technological advances that allow companies to take advantage of foreign labor, and population growth. Even in the U.S., despite historically low unemployment rates and a strong economy, average workers are not well off, with low savings and high debt rates. A disenfranchised middle class leads to instability.

5) A Warning from the Ice (Changing Climate): In the long run it doesn't matter whether climate change is human-induced. Growing populations and highly leveraged food supplies globally mean that we are very susceptible to changes in weather patterns and climate that affect food production. El Niño was a good preview of what sustained climate change might bring. Its affects interrupted food supplies and added to political instability. There is no question that global warming is taking place. This means changes in growing seasons, infectious diseases, and a host of other things that affect human settlements.

6) A Biosphere in Disarray (Damaged Ecosystems): Long before particular species begin to go extinct, the ecosystems that support them are thrown into disequilibrium. And as humans bring land under cultivation, they do damage to natural systems. Often the pressures that exist on a system are varied and the costs of their exploitation are slow to manifest. This means that once the damage is apparent, it is often too late for a simple solution that would repair the damage.

7) Living with Limits (Global Agricultural Supplies): The global agricultural system is finding it increasingly difficult to keep up with ever-growing demands for food. Any kind of disruption to the system, whether it is weather or political upheavals, could counter the projects of increased production. The volatility that exists in the global food system makes it very vulnerable to upsets. Additionally, water stress will be a major limiting factor in future productivity.

8) Infectious Disease Resurgent: Environmental degradation, social instability, and human migration all contribute to the incidence of infectious diseases. These diseases are both a symptom and a cause of global instability. Changes in infectious disease are also affecting many animals as they spread between species.

9) Rise of Religious Fundamentalism: Islamic fundamentalism and the religious right in the United States present powerful challenges to modernity and the values of consumer society. As instability spreads, religion of all sorts will become more popular and powerful. Like disease, this is both a symptom and a cause of instability.

All of these elements, according to Linden, interact to increase the global potential for instability. And, he believes, we cannot avoid instability and dislocation. However, it is within our power to regulate and mitigate this change. Volatility, a decreasing complexity, and instability are all terms that are being used to describe parts of our world as diverse as financial markets and forest ecosystems. The response of the global population will likely take many forms. Mr. Linden is of the opinion that the most important will be a sort of social insurance created through the strengthening of family ties, peer groups, and traditional hierarchies. All of these are positive as long as they are not accompanied by xenophobia. The rise of a new environmental ethic is also a good sign. Once values begin to change, progress can be surprisingly rapid.

Mr. Wise complimented Eugene Linden for making these complex issues accessible to a wide audience of readers. He then went on to discuss various meanings of the word "stability" and their implications for this discussion. In science, he observed stability means a situation that allows original conditions to be reestablished after a disruption. Society is not stable in this scientific sense, however it has its own method of adjusting to change while maintaining continuity. However one defines stability, Mr. Wise offered that fifty-two years is a rather long time to project into the future.

From the perspective of a policymaker, Mr. Wise believed that Mr. Linden presented something of a cliff-hanger. The clues are long-term and hard to reduce to specific phenomena. However, he argued that there is something that policy makers can do. The question for the policy community is how to moderate the effects of the coming instability? In response, five observations shape the context in which one can find answers.

1) Democratic leadership systems have problems moving faster than, or moving against, the population or electorate;

2) Policy makers are spurred by crisis and policy is often crisis-driven;

3) Long-term problems are not immediately felt by or obvious to the electorate;

4) U.S. leadership is essential if we are to solve these problems;

5) The U.S. cannot or will not lead on remediating problems without strong public support to do so.

Educating the public about these issues is very important; it is also very difficult. The public needs to be shown how disparate and often distant events impact their individual well being. Climate change is a good example. An active civil society is not only the catalyst for policy but also for the development of values themselves. Ultimately, policy making is collegial but not consensual. We try to do things as a government and society together, but we do not always agree. Policy is the outcome of negotiation among stakeholders and is always evolving. We need to engage a broader spectrum of society in these issues.

19 October 1998

The Cold War Nuclear Legacy in Russia: Military Culture and International Cooperation

THOMAS JANDL, DIRECTOR, BELLONA USA

The cold war was really a minute battle in the long nuclear war. The question is now, are we prepared to win the remainder of the war, which is the legacy of nuclear waste, remarked Thomas Jandl, Director of Bellona USA in Washington, D.C., at a Woodrow Wilson Center lecture on 19 October 1998, cosponsored by the Environmental Change and Security Project and the Kennan Institute for Advanced Russian Studies. "Nuclear waste, as opposed to the nuclear weapon itself, is measured in ten and hundreds and thousands of years of a dangerous life span," Jandl further explained. Founded after the 1986 accident at the Chernobyl nuclear plant in Ukraine, the Norwegian environmental group, Bellona, focuses its efforts on northwestern Russia, where the former Soviet Union built and operated a large fleet of nuclear-powered submarines on the Kola Peninsula, adjacent to the Norwegian border. The group is primarily concerned with the tail end of the nuclear pipeline—nuclear waste management. In his lecture, Jandl explored the roles played by the Russian military culture and international cooperation in the nuclear waste management process in Russia.

"Russia is a society in which the military culture is very much ingrained," commented Jandl. At the present time, Russia is under a new system, has a new place in the world, and is clearly facing an identity crisis. Moreover, with NATO enlargement creating a defense alliance right at Russia's borders, Jandl stated that many Russian policy makers, and not just the nationalists, feel the need to slow down disarmament. Additionally, military secret decrees and commissions are justified as necessary measures to protect the Russian military from a foreign takeover. However, according to Jandl, groups in the Duma are passing and implementing secrecy laws (including retroactive laws) that can make it ambiguously illegal to do any type of research, including nuclear waste research, as evidenced with the Alexander Nikitin case.

Left to right: Blair Ruble and Thomas Jandl

Alexander Nikitin, a retired nuclear submarine captain in the Russian navy and nuclear engineer, worked with Bellona staff in generating a report on the problems the Russian Northern Fleet has with its nuclear-powered vessels and with the storage of spent nuclear fuel and other radioactive waste. Nikitin, unlike his non-Russian co-authors, was subsequently charged with espionage and treason for these actions. These charges were based on secret decrees, which the court later ordered the military to release. Jandl remarked that this decision is encouraging and believes that this could be a watershed trial.

Jandl is also optimistic about the current transition taking place in Russia, in which authority over nuclear waste projects is being transferred from the military to MINATOM—the Ministry of Atomic Energy of the Russian Federation. This shift mirrors the dualistic system in the United States, in which the military produces nuclear arms and the Department of Energy manages the resulting waste. However, Jandl noted that it is not yet clear how this will specifically affect nuclear waste policy. He remarked that the one option that could challenge the existing culture of defense would be the entry of large corporations into the nuclear waste management process. If companies that bring large amounts of money into Russia become part of the equation, there is a greater chance of more being accomplished.

Regarding potential industry involvement, Jandl commented that his organization has been discussing with members of U.S. and European industry, and the Russian government, the means by which industry can increase its participation in clean-up efforts. Large corporations and semi-private and semi-governmental laboratories have already been conducting feasibility studies. Yet without an agreement on proper policy, corporations are unwilling to pour large amounts of money into only potential solutions.

Bellona is currently working on a general nuclear waste management strategy with American policymakers to ensure the U.S. military and civilian agencies engage Russia through cooperative programs within a coherent policy. Currently, the United States is maintaining its policy against funding projects that involve reprocessing nuclear waste, due to proliferation considerations. This practice is in opposition, according to Jandl, to the solutions proposed by Russia, which are only cost-efficient if the end result is the reprocessing of waste. For example, Russian proposals include shipping nuclear waste from two sites, one of which is in Northwestern Russia, to a third storage site where "wet storage" facilities will be built. Jandl noted that while this is not the most advanced technology recommended for storage, it is the best technology to use if at some point Russia would like to remove

and manipulate the waste. While Russia acknowledges that no current market for reprocessed fuel exists, they do want to keep their options open for this possibility in the future. Although Bellona is against the reprocessing of nuclear waste, Jandl believes that this is an issue that requires further debate between the opposing viewpoints.

Despite problematic policy issues, Jandl asserts that groups on both sides are attempting to move the waste management process forward. Jandl noted that despite its involvement in the Nikitin case, Bellona still has a fair amount of support from those in the Duma interested in accelerating international cooperation on nuclear waste projects. Bellona has formed a working group which brings together members of the Russian Duma and administration with their European counterparts, and—at the request of the Russians—with representatives of the American government and policy community.

On a final encouraging note, Jandl commented on the limited agreement between Russia and Norway for specific environmental programs and projects. Under the agreement, Norwegian aid is now exempt from taxes, duties, and fees. The agreement also eliminates the possibility of legal measures against Norway, Norwegian personnel, or suppliers in the event of an accident. Previously, the lack of protection against liability placed several crucial projects in jeopardy. The agreement is now being extended to other specific projects which include the U.S. Department of Defense.

Woodrow Wilson Center Fellows associated with the Environmental Change and Security Project:

D.J. Peterson was a public policy scholar during the summer of 1998. He came to us from the RAND Corporation in Santa Monica, California, and organized the ECSP conference "The Toxic Legacy of the Cold War: Environmental Conditions in the Former Soviet Union," which took place on November 9-10, 1998. Peterson is the lead author compiling the conference proceedings into a volume for publication by the Wilson Center.

Mark Sagoff assumed a fellowship at the Center from his position as Senior Research Scholar, Institute for Philosophy and Public Policy, University of Maryland, College Park. He was a Wilson Center fellow from September 1998 through June 1999. His research focus was "Environmental Policy: Non-Economic Values in Decision-Making."

William M. Wise has been a public policy scholar at the Center since January 1999. He is President of the Sorrento Group, a consulting firm. While at the Center, Wise has been working on a proposal to establish an environmental dialogue with China, as well as beginning a study of U.S. national security organization for the 21st Century. Wise was the former Deputy National Security Advisor to Vice President Gore from 1991--1997.

Richard Lazarus will be a fellow from September 1999 until May 2000. He is Professor of Law at the Georgetown University Law Center. He plans to work on a book analyzing modern environmental law's emergence in the United States and its evolution during the past three decades.

Joseph M. Alcamo will serve as a public policy scholar with ECSP, working at the Center for two weeks in October 1999 and two weeks in April 2000. Dr. Alcamo is Professor and the Director of the Center for Environmental Systems Research, University of Kassel, Germany. Alcamo's proposed project is "Global Environmental Change and its Threat to Food and Water Security in Russia."

20 October 1998

All Tapped Out: The Coming Crisis in Water and What We Can Do About It

PAUL SIMON, DIRECTOR, PUBLIC POLICY INSTITUTE, SOUTHERN ILLINOIS UNIVERSITY AND FORMER UNITED STATES SENATOR

As the world's population and global economy grow, demands on the world's freshwater resources are increasing. Traditional water institutions, laws, regulations, treaties, and agreements are straining to meet the new demographic realities of the next millennium. The Environmental Change and Security Project hosted a meeting in October 1998 with former Senator Paul Simon (D-Illinois) to discuss his recent book, *Tapped Out: The Coming Crisis in Water and What We Can Do About It*. The following remarks are as delivered.

We acknowledge that there is a link between security and democracy. There is a general recognition that when we have democracies we have less threat to security. Stable democracies for example, don't attack one another. If today China were a democracy, there would be much less apprehension of its behavior.

There is also a relationship between democracy and the environment. A good example was Poland before 1989. The doctors in Krakow said that people in the city lived an average of six years less than people in other areas of Poland because of the pollution coming from what was then Czechoslovakia. Under a totalitarian system the population could do nothing about the situation. In China today there are serious environmental problems. But they are not a democracy. Additionally, these kinds of problems are not confined to the borders of any one country.

Paul Simon

That we are going to face a huge problem in water is not a secret. But it is almost a secret. There is a great deal of literature on various aspects of the water problem and its link to security, migration, and population. And it is the link between water scarcity and population growth which poses the biggest problem. For most of the history of the world we probably had around ten million people. In 1830, global population reached one billion, in 1930 it reached two billion. Most population experts predict that the world's population will double in just over 50 years. While population doubles, our water supply will remain constant. Ultimately, population is part of what we have to address.

It is commonly perceived that nations go to war over oil, but there are substitutes for oil. There is no substitute for water. The United States has four percent of the world's population, but about eight percent of the world's water supply. But the statistics for the United States, as for many other countries, are misleading because of the problem of the distribution of water. For example, California is already using more than its allotment from the Colorado Compact, and its population is projected to increase by ten million people over the next decade. It is unlikely that the other states in the Colorado Compact are going to continue to let California use more than its allotment. In addition to California, Texas, Nevada, and Florida also have severe water problems.

Internationally, we also face some very severe problems. The Aral Sea is a good example. This sea was once the World's fourth largest body of water. Today there are hulks of ships stranded fifty miles from water. Krushchev was convinced by some engineers that he could divert water for growing cotton and it would return to the Aral Sea. The ship captains were told leave your ships there, the water is going to come back. And they left their ships there. The Aral Sea should be a warning to all of us.

The World Bank says that in 20 years, 35 nations will face severe water problems. Roughly 35 million people today are in places that have very serious problems. By the year 2025, that will be three billion people. The Middle East is illustrative. Israeli and Arab leaders are very knowledgeable about water. Few American leaders are knowledgeable about water. Almost every leader in the Middle East has said that if there is another war, it will be over water not over land.

Egypt, another good example, gets about 99 percent of its water from the Nile. Eighty-five percent of the Nile originates in Ethiopia. Ethiopia is going to double its population in 20 years. What is going to happen when the demand for water is much greater in Ethiopia? It is unlikely that Ethiopian leaders will be willing to sacrifice the interests of their population to continue to subsidize Egyptian and Sudanese water use.

The short-term answer and part of the long-term answer to water shortages is conservation. Part of conservation is using the market mechanism to charge adequate prices for water. There are currently many water districts in the United States that charge a flat fee no matter how much water one uses. Some of the Western farmers are charged one percent of the actual cost of the water

they use. This should be a thing of the past.

We can also do much better in our households. But the emphasis on household conservation is primarily an educational tool. According to the U.S. geological survey, only four and a half percent of the water that we use in the United States is within our households whereas 80 percent of the water that we use in the United States is for agricultural purposes.

A long-term solution to water scarcity that we ought to be pursuing is desalination research. Ninety-seven percent of the earth's water is salt water. Seventy percent of the Earth's population lives within 50 miles of the ocean. Currently, desalinated water is inexpensive enough for drinking purposes but still too expensive for agricultural and industrial uses.

The United States had two leaders that invested a great deal in desalination research: Dwight D. Eisenhower and John F. Kennedy. At one point the U.S. was spending about $120 million in research. We are down to about two million dollars and most of it is for interior desalination: desalination from water that has an excessive saline content within the country.

Two other areas that deserve attention are population and pollution. In the area of population the U.S. ought to be assisting the UN and other agencies. There is not a single nation in the world, with the possible exception of North Korea that doesn't have some kind of a population program. But most of these programs in developing nations exist only on paper.

Pollution is also related to the problem of water quality and quantity. Our aquifers around the world are generally declining, some very dramatically. Constant levels of pollution in declining levels of water result in higher levels of toxicity.

The danger that exists now is that we will drift until there is a crisis. American politics, and the American private sector, tend not to think beyond the short term. In politics, we tend to look to the next election, or at most, to the year 2000. In this kind of a situation we are going to have to look at where we are going to be ten years from now or twenty years from now. American politicians are not known for being forward-looking.

NEW Environment and Security Briefing Paper

In a recent issue of *Foreign Policy in Focus*, Dr. Stacy VanDeveer of Harvard University addressed the issue of the environment and security policy. The main thrust of his argument was that environmental issues present challenges to U.S. foreign policy and security interests and that these issues are not integrated into U.S. foreign and security policy. You can read his paper on-line at http://www.foreignpolicy-infocus.org.

Foreign Policy In Focus is a series of policy briefs, each four pages, designed to provide the latest research and analysis on timely foreign policy subjects. Written by regional or issue specialists, they document problems with current U.S. foreign policy and offer policy recommendations for U.S. foreign policy. The project depends on sales and subscription income, individual donors, and grants from several foundations.

Foreign Policy in Focus is a joint project of the Interhemispheric Resource Center (IRC) and the Institute for Policy Studies (IPS). The IRC (http://www.zianet.com/irc1/), founded in 1979, produces books, policy reports, and periodicals about U.S. foreign policy and U.S.-Mexico border issues. The IPS (http://www.ips-dc.org/) has served as an independent center for progressive research and education for more than three decades.

6 November 1998

Facing the Coming Water Crisis

DON HINRICHSEN, CONSULTANT, UNITED NATIONS POPULATION FUND

Two-thirds of humanity does not have the luxury of getting clean and potable water out of a tap. In metro-Manila, one-third of the people have no access to clean water; open canals are used for everything, including drinking and bathing. Groundwater aquifers and rivers are polluted with refuse, garbage, industrial waste, and raw sewage. As a result, tap water is polluted. Around the Aral Sea, the oil industry and petroleum residues from rotting ships are polluting groundwater aquifers. Water from New Delhi's largest river is so polluted that even after you boil it for twenty minutes, the smell is so bad that people have trouble drinking the water. At best, the water can only be used for washing, but the poor often have no choice but to drink it. In the island of Negros off of the Philippines, people have relatively clean water, but it still needs to be boiled because of pathogens in the water from waste. In the case of rural India, water must be boiled because agricultural chemicals leech into the groundwater supply.

Freshwater is emerging as one of the most critical resource issues facing humanity as we enter the twenty-first century. The world's population is still expanding rapidly, increasing at about eighty million per year, despite the fact that growth rates have continued to drop over the past several decades. Yet, there is no more water on Earth now than there was two thousand years ago, when the population was less than three percent of its current size. Water is a finite resource—there is only so much circulating around the world's hydrological cycle.

Within the next thirty years, close to fifty countries could face water shortages, affecting about three billion people. In other words, forty percent of the world's projected global population will be affected by chronic or serious water shortages. This means that people will not have access to clean potable water for possibly six months of the year or more. If they do have access, it is extremely limited to a few hours a day or a few hours every other day. Nonetheless, in a growing number of places, people are withdrawing water from rivers, lakes, and underground aquifers faster than it can be reused or recharged. At the same time that population grows (or explodes, as in the case of the Third World), water consumption patterns increase from agricultural, industrial, and municipal uses.

Currently, thirty-one countries, with a combined population of 458 million, face water shortages or water stress. In other words, their water resources on a per capita basis are below the level needed to maintain both ecosystems and to provide for growing human needs. Population growth alone will push an estimated nineteen more countries into the water-stress or water-scarcity categories by the year 2025. Another nine countries will also be pushing the limits of their water resources; they just missed the cut-off for "water-stress" which is 1700 cubic meters per person, per year. "Water-scarcity" is 1000 cubic meters per person, per year.

Beyond the impact of population growth alone, the demand for freshwater has been rising much faster than population size. Globally, in this century, water withdrawals have increased by over six times while the population has tripled. Hence, there is a doubling of water usage. The way in which economies develop explains this phenomena. Water usage increases because it is being used more intensively for agriculture, industry and municipal uses.

The supply of freshwater available to humanity is shrinking on an overall basis, because many freshwater resources have already been driven to the point where they can no longer be renewably used again, year after year. People are either overusing surface waters or drawing down groundwater aquifers to depletion. Depending on their depth, some of the aquifers are readily renewable, while others are not. For example, fossil aquifers, which take thousands of years to replenish themselves, are definitely not a renewable resource. Many developing countries face uneasy choices as they are caught between finite and increasingly polluted water supplies on the one hand and rising demand from population growth and development on the other. The lack of freshwater is likely to be the major factor limiting their economic ability to grow in the future.

As population grows, so does the demand of freshwater for food production, household (municipal) consumption, and industrial uses. The availability of freshwater limits the number of people that an area can support and directly affects their standard of living as seen from the situations mentioned earlier: metro-Manila, India, Eastern Europe, and the island of Negros. In turn, population growth and density typically affect the availability and quality of water resources in an area, as people attempt to assure their water supply by digging wells, constructing reservoirs and dams, and diverting the flows of rivers. China, as an example, is planning on building an eleven-thousand kilometer long aqueduct to ferry water from the interior province up to the Beijing area which is chronically water short. Despite the floods of the last summer, Northern China is generally an area that has an extreme shortage of freshwater. Still, the population in China is continually increasing and industrial growth is expanding.

Scarce and unclean water supplies still remain a critical health problem in much of the world. Polluted water, water shortages, and unsanitary living conditions kill over twelve million people per year. Almost all of those deaths are in developing countries.

Increasing competition for water supplies often causes social and political tensions. River basins and other water bodies do not respect national borders. For example, one country's use of upstream water often has a destructive effect on downstream countries depending on how much is used and how it is taken out. Currently there is a prospect of war over water resources. Egypt has already publicly threatened Sudan and Ethiopia over the waters of the Blue Nile. Both countries want an increased portion of that water for agricultural purposes, but Egypt needs as much as it can get because ninety-eight percent of Egypt's freshwater comes from the Nile River. Without the Nile, Egypt could not exist. Water is, in fact, a life and death issue for people, particularly in the Middle East.

Slowing population growth and conserving water are two things essential in confronting this water crisis. One cannot be done without the other and still be effective. To avoid a water crisis, particularly in water-short countries with rapid population growth, it is vital to slow demand for water by slowing population growth. Providing widespread access to family planning has helped millions of couples who want to space and limit their births and have the information and means to do so. Family planning programs play an important part in this whole equation, but it is often overlooked by the usual hydrological viewpoint, which is "How much water do we need and where do we get it?" Instead, "How much water do we have and how best can we actually utilize available resources without ruining the supply for future generations?" should be asked. Water expert Sandra Postel, says that the world does the "zero-sum game" of water management. That is, you take water away from one user and give it to someone else. Rather than water management, such theory and practice is "water anarchy." The world must get away from this mindset if an impact is going to be made to use water resources on a sustainable basis.

A "Blue Revolution" is called for. First, water must be priced according to the value of the resource. Presently, water is basically free—water is used liberally even in water-short countries. In Cairo, Egypt, puddles of water stand all over from broken water mains and leaky pipes. Faucets run. In the developed world, people water their lawns in the desert in the middle of the day. This is completely counterproductive—these areas should not use that kind of water to begin with. Water is being wasted everywhere. By pricing water appropriately, users are paying the costs of utilizing the resource. Money can then be channeled back into proper management.

Second, water must be utilized more efficiently. Agriculture, for example, uses seventy percent of the world's water on a global average. Fifty percent of all water drawn for irrigation is wasted before it gets to the crops. This applies to developed countries as well as developing countries. Drip irrigation is one alternative used in Israel, which is ninety percent efficient. Ninety percent of the water drawn for irrigation actually gets to the crops. Through little tubes, water is channeled directly to each of the plants. While this method is intensive and costly, wealthy countries like the United States (who can afford to do so) should take advantage of this method because it efficiently and effectively conserves water. If countries do not price water or introduce sensible management regimes as they develop, the gap between population growth and consumption will continue to grow astronomically. At some point, the world will simply run out of this vital resource.

Countries considered water-stressed and water-scarce have already begun to run out of water for all or part of the year. Some alternatives that have been considered have already failed miserably. China, which already has critical water shortages, is considering importing glacial and lake water from Canada. This is a ludicrous strategy. While it might be a temporary solution to water problems, it will not be sustainable in the long run. And what happens when water exporters decide to use it as a political lever? Such a plan is no different than the idea of towing icebergs from the Antarctic to the Middle East to use for freshwater. When tried, the iceberg was gone by the time it got to the Gulf. Inter-basin transfers are not an option either; consider the southwestern part of the United States, which has completely drained the Colorado River. Now there is nothing left by the time the Colorado River gets to the Gulf of California. Bottom line—if we do not start managing our supplies, we are not going to have any water for industrial, municipal, or agricultural uses in the future. Or, if we do, the water will be so badly degraded and difficult to use effectively. The world will also see increasing conflicts between regions and within countries as they fight over water resources.

[Editor's Note: The preceding are Don Hinirchsen's remarks as delivered.]

Please visit the ECSP website at http://ecsp.si.edu for meeting updates, full text of all project publications, and the new ECSP-FORUM listserv.

9-10 November 1998

The Toxic Legacy of the Cold War in the Former Soviet Union: Assessing Conditions/Finding Solutions

On November 9-10, 1998, the Environmental Change and Security Project, The Cold War International History Project, and The Kennan Insttitute for Advanced Russian Studies convened a meeting on the toxic legacy of the Cold War in the former Soviet Union. Experts from the former Soviet Union and the United States presented papers commissioned for the two-day meeting held at the Wilson Center. Below, please find a list of topics and speakers. A volume of the conference proceedings will be published in 1999. Please contact ECSP at ecspwwic@wwic.si.edu if you are interested in copies of the working papers.

Conference Overview
D.J. Peterson, Resident Consultant, RAND Corporation and Woodrow Wilson Center

The Toxic Legacy in the U.S. and Russia: Two Sides of the Same Coin?
Francis Macy, Center for Safe Energy, Earth Island Institute

The Landscape of the Toxic Legacy:
Behind the Nuclear Curtain
Donald Bradley, Technical Group Manager, Batelle/Pacific Northwest National Laboratories

Environmental Implications of Chemical Weapons Production, Storage, and Destruction
Lev A. Fedorov, Director, Union for Chemical Safety, Moscow

The Conventional Military and Defense Industry Legacy
D.J. Peterson, Resident Consultant, RAND Corporation and Woodrow Wilson Center

U.S.-Russia Military Cooperation to Promote Environmental Security: A Review
Gary Vest, Principal Deputy Under Secretary of Defense for Environmental Security

Regional Perspectives on Clean-up and Redevelopment:
NGO Initiatives to Assess the Condition and Utilization of Former Military Bases in Ukraine
Oleg Lystopad, Kiev Ecological and Cultural Center and Deputy Editor, Zeleny svit (Kiev)

Cleaning-Up and Rebuilding Vladivostok after the Soviet Navy
Boris Preobrazhensky, Institute of Oceanography (Vladivostok)

Wilderness and Biodiversity Benefits from Standoff on the Soviet Border
Margaret Williams, World Wildlife Federation and Editor, *Russia Conservation News*
Sergei Ponomarenko, Co-Director, Laboratory of Ecological Designs (Moscow)

The Impact on Communities and the Role of NGOs:
Fallout from Nuclear Weapons Testing: Public Health and Citizen Activism in Kazakhstan
Kaisha Atakhanova, Director, Karaganda EcoCenter (Kazakhstan)

Chelyabinsk Nuclear Weapons Complex: Environmental Attitudes and Activism in the Region
Paula Garb, School of Social Ecology, University of California-Irvine

Local Advocates vis-a-vis Facility Management (Moscow) and International Actors
Jennifer Adibi, EcoBridge Environmental Program for CEC International Partners

The Military and its Management of the Environment:
Lessons Learned Working Up Close with Russian Nuclear Specialists
Ted Grochowski, Director, European Programs, NUKEM (Frankfurt)
Paul Childress, B&W Services Inc.

Kola Naval Nuclear Complex: Environmental Activism and State Secrecy Today
Thomas Nilsen, Bellona Foundation (Oslo)
Nils Bøhmer, Bellona Foundation (Oslo)

International Assistance: Opportunities and Stumbling Blocks
Sverre Stub, Norwegian Royal Ministry of Foreign Affairs (Oslo)

10 December 1998

Ecology and Human Rights

Aleksei Yablokov, Chairman of the Board, Center for Russian Environmental Policy, Moscow, and Former Advisor to the President of the Russian Federation on Environment
Vladimir Zakharov, Director, Center for Russian Environmental Policy and Project Head, *Priorities of the Environmental Policy of Russia*

Lacking a civil society or middle class, and unable to handle any other critical issues as a result of the economic and political stagnation, Russia is choking the ecological movement to protect the Russian environment and citizen's health, according to Aleksei Yablokov. The former Advisor to the President of the Russian Federation on Environment, Yablokov addressed environment and human rights issue in Russia at a public meeting co-sponsored by the Environmental Change and Security Project and the Kennan Institute for Advanced Russian Studies of the Woodrow Wilson Center. Vladimir Zakharov, Director, Center for Russian Environmental, made additional comments on the process of identifying Russian environmental priorities.

In addition to viewing civil society as prostrate, Yablokov said the local administration lacks an effective voice because of the roughly even balance between the political left and right in Russia. Adding to this choked political atmosphere is the growing corruption of officials and the rise of organized crime. The murder of Galina Starovoitova, a prominent female politician in St. Petersburg, on November 20, 1998, is an example of the grip that organized crime has over the prostrate local governance structure. Another grave problem Russians must overcome is the increasing gap between the extremely poor and the extremely rich. More and more Russians are falling beneath the poverty line everyday. Russians are reacting to the daily threat of not having enough to eat and are unable to worry about the environmental and long-term health impacts of air, surface, and water pollution.

These factors listed above are creating an unstable political and social environment where ecological protection is seen as a luxury and is suspect in the eyes of the government. Yablokov maintained that secrecy and censorship have become tremendous problems across Russia as evidenced the arrest of environmentalists for revealing state secrets. One of the better known victims of this rise in secrecy is the Bellona Foundation's Alexsandr Nikitin, a former naval officer currently being tried for treason [*Editor's note: For more on this case, please refer to "Secrect vs. the Need for Ecological Information: Challenges to Environmental Activism in Russia" in* ECSP Report Issue 4 *or visit the Bellona Foundation web site at: http://www.bellona.org.*] Lacking any strong grassroots movement, the Russian environmentalists and nongovernmental organizations (NGOs) are unable to mount an effective alliance against the intelligence services and the military. This growing secrecy has prevented activists from inspecting military installations, particularly those that have nuclear facilities. In sum, new laws and the movement to greater secrecy have led to less transparency in governmental agencies, less informative state data reporting, and greater censorship of NGO publications.

Zakharov supported these remarks by Yablokov and even suggested what changes need to be implemented before the environment would improve in Russia. Foremost, he stressed the need for a strong middle class to counterbalance the current tendency to a wider gap between the poor and the wealthy. The ultimate goal, according to Zakharov, is to move towards a civil sustainable society in Russia that incorporates the efforts of NGOs for the strategy to be effective.

13 January 1999

Green Politics and Global Trade

JOHN J. AUDLEY, DIRECTOR, INTERNATIONAL AFFAIRS, NATIONAL WILDLIFE FEDERATION

For nearly ten years, the National Wildlife Federation [NWF] has been actively involved in efforts to sensitize trade and investment agreements to environmental issues and priorities. The ten years have been marked by some important successes as well as some disappointing missed opportunities. My message to you today is grounded in that record.

I have two points to make today. First, we stand at an unprecedented crossroads in the future of trade and investment policy. Never before have the political stars been aligned to produce substantive advances in the trade and environment agenda as they currently are now. The second point comes in the form of a challenge to you all. While we are now presented with this important opportunity, we meet it with empty hands, empty of good ideas and substantive analysis. Absent this, we are left to engage in this policy debate with well-intended but misguided information provided by the extreme views that currently fill the information vacuum.

Left to right: Geoffrey Dabelko and John Audley

I will briefly present to you the history of events that bring us to this point today by using history's lessons as my framework. I will then describe for you the current opportunities to have a positive effect on the outcome of the trade and environment discussion.

Though the relationship between trade and environmental quality dates back to the earliest days of interstate trade, few trade advocates or environmentalists focused attention on this important matter until the 1980s. In the 1980s, a series of international trade disputes involving environmental regulations, food, and human health and safety, called attention to the potential "non-tariff" trade implications of national environmental laws. While trade enthusiasts tried hard to rid themselves of these pesky trade restrictions, environmentalists for the first time saw efforts to liberalize trade as a direct threat to their own efforts to protect the environment. Among these early disputes, one stands out—a dispute between the United States and Mexico over the importation of "dolphin-safe" tuna which erupted into the four-year, two-stage, "Tuna/Dolphin" dispute at the WTO [World Trade Organization]. The "Tuna/Dolphin" debate underscored a substantive difference between the goals and tools of trade and environment advocates. Can a country use trade tools that discriminate between products based upon production process methods to promote national and environmental priorities?

The environmental community used this debate to press its case for greater trade sensitivity to environmental concerns during the NAFTA [North American Free Trade Agreement] negotiations. U.S. environmentalists relied upon a number of factors—access to U.S. decisionmakers, a three-country negotiation involving neighboring countries, and the environmental devastation wrought by accelerated economic activity along the Mexico-U.S. border—to press two administrations. Their efforts produced two sets of environmental provisions.

1) Some specific references to the environment in the body of the agreement itself.
2) A set of 'parallel' agreements designed to: assuage political opposition to NAFTA's passage; and address regional and hemispheric environmental concerns related to accelerated economic integration.

While divided but successful during NAFTA, environmentalists did not fare as well during the completion of the Uruguay Round of GATT [General Agreement on Tariffs and Trade]. A number of factors resulted in the passage of a trade agreement despite unanimous (but irrelevant) opposition from environmental groups. They included: 1) the multitude of powerful governments who themselves did not feel public pressure to integrate environment and trade; 2) southern country opposition which stemmed from a fear that another 'market-access' condition would be set up; and, 3) the U.S. administration's unwillingness to continue in its role as the international leader.

The U.S. environmental community learned a number of lessons from the NAFTA and GATT experiences:

1) Not enough attention is being paid to the substance of trade policy.
2) Some of the substantive issues are best dealt with in parallel agreements, whose own creation is made possible by the act of negotiating the economic instrument in the first place.
3) Citizen participation is essential. The environmental community's leverage during the NAFTA negotiations was enhanced by the fact that (in the United States) it was allied with organized labor. Power was based not on the ability to change policymakers' minds, but to block negotiations from moving forward.

The momentum enjoyed by environmentalists through the NAFTA period has died out. However, for a variety of reasons, it may be returning. Again, it was a series of catalyzing events that positioned environmental groups to stop negotiations such as the MAI [Multilateral Agreement on Investment] and presidential fast track negotiating authority. These policy failures, combined with the financial crisis of recent months, now ripple through the following trade and investment negotiations: FTAA [Free Trade Area of the Americas], the WTO follow-up on implementing the Uruguay Round's commitments and in particular the bi-annual WTO Ministerial meeting scheduled to take place in the United States this November someplace hopefully warmer than Washington D.C., TEP [Transatlantic Economic Partnership], and APEC [Asia-Pacific Economic Cooperation].

In response, some governments and inter-governmental organizations are now willing and ready to engage the environmental community; including the United States government. For a long time we have argued, and I still believe, that the U. S. government lacks a coherent policy on trade and environment. But absent that policy the United States government continues pushing the agenda forward. For reasons I still do not understand, they volunteered to hold the WTO Ministerial meeting in the United States knowing full well that it will mobilize thousands of groups to demonstrate against it. The United States is arguing for greater participation by the public in the FTAA negotiations and is meeting tremendous opposition primarily from governments in Latin America.

We can look forward to a sequence of events between now and the November WTO Ministerial meeting which, if properly utilized, could present environmentalists with an unprecedented opportunity to reshape the debate around both trade and investment policy. We meet this opportunity, as a community, largely empty of substantive policy recommendations to make our cases solidly. Historically, the environmental community has focused on process, the way things are negotiated, and not substance. It is our strength and our weakness. We care more about the way decisions are made than what the actual decision is that is made. I guess in that sense we are true democrats. But because we have focused our limited resources primarily on the process issues, to our detriment we lack knowledge of the substantive issues. Some substantive issues are being addressed such as investment provisions in trade agreements but what we are missing are good, solid, discussions on the variety of trade related environmental issues like: climate change, the use of pesticides and fertilizers, land use patterns, and sustainable communities. All of us talk about the fact that these relationships exist but I cannot characterize them for you and how can I represent my constituency effectively if I cannot characterize what are undoubtedly some of the most important issues we face in the new millennium.

There are a couple of good studies such as the CEC [the Commission for Environmental Cooperation] sponsored NAFTA effects studies on the trade effects in feed lots, corn, and energy. The WWF has done a similar NAFTA effects study on forestry and energy. These are actually very good studies that are not getting very much attention. One of the reasons that the CEC studies have not gotten much attention is because the three governments would not allow them to be distributed for public comment. But these studies only hint at the various trade and environment areas that need to be researched.

Let me conclude by asking this of you. We at NWF are doing our best to promote a pro-active, positive vision for trade, investment, and the environment. We recognize that under certain circumstances there are opportunities in which trade plays a positive role in putting pressure on governments to eliminate subsidies that negatively affect the environment and to encourage the kind of economic activity that empowers people to take care of themselves and their families. However, we also recognize that trade institutions have no business in certain environmental issues. Trade should not dictate to multilateral efforts to set and implement environmental priorities. Rather, they should work in collaboration with these other international, inter-governmental organizations.

I know I can talk with authority about the process-related issues. I know I can speak with authority about the politics of trade negotiations in the Unites States and elsewhere. I and my team at NWF are paid to be good advocates, however we need to be able to tap into an intellectual community that can provide us with the kind of technical analysis of the substantive issues. We need the analysis that puts us on solid ground so that we can take full advantage of the opportunities before us in the coming year and years. I pledge my organization's efforts to craft opportunities so that we can work together. We need, the environmental community needs, help from folks like you and others so that we can give governments the kind of advice I honestly believe they are asking of us now.

15 January 1999

Developing a Strategic Framework for Population-Environment Interventions

Denise Caudill, Consultant, World Neighbors
Teresa de Vargas, Executive Director, Center for Medical Guidance and Family Planning (CEMOPLAF)

Participants at this meeting, co-sponsored jointly by the University of Michigan Population Fellows Program and the Environmental Change and Security Project, focused on the report "Lessons from the Field II: Integration of Population and Environment." This report, recently published by World Neighbors, includes the results of an operations research project that compares the impact of single-focus vs. integrated programming in 12 communities located in Ecuador.

Denise Caudill set the context for the discussion by pointing out that the linked population-environment interventions in Ecuador really grew out of a "friendship" between the Center for Medical Guidance and Family Planning (CEMOPLAF) and World Neighbors. This partnership led to the design and implementation of the pilot project. Caudill raised the issue of selection bias and pointed out that CEMOPLAF and World Neighbors are well aware that their research has some design and methodological weaknesses.

Speaking through a translator, Teresa de Vargas, Executive Director of CEMOPLAF, provided an overview of CEMOPLAF's activities and its linked projects. CEMOPLAF was created in 1974 with support, in part, from USAID [United States Agency for International Development]. It currently operates in ten provinces of Ecuador, with contraceptive programs in four provinces (Ecuador is divided into 21 provinces). CEMOPLAF grew up autonomously and is not affiliated with any international organization. Its personnel are 98 percent female. In fact, the active participation of women is a key element of CEMOPLAF's projects.

In 1998, CEMOPLAF provided services for 500,000 women. Its mission is to work primarily with low-income or middle-income women. CEMOPLAF's project in Guaranda was originally intended to serve the rural, indigenous population. Its Integrated Health Program was created in partnership with World Neighbors to promote family well-being including family health and food security. The number one goal was to develop a pilot program to serve as a model, with an emphasis on health and agriculture.

De Vargas summarized the research study as an attempt to compare CEMOPLAF's integrated project with a health-only project. The overall goal was to evaluate the model and try to replicate it with other indigenous populations. A survey of fertile women was carried out (by women) to collect baseline information on health. A survey of men was carried out to collect baseline information on agriculture. De Vargas noted that indigenous populations in Ecuador tend to view health programs with suspicion due to past experiences.

The research study revealed an increase in soil productivity as a result of the agricultural program implemented by CEMOPLAF. The integrated project had a much better response from people than the health-only project. Due to its experience working at the community level, the Ministry of Health in Ecuador uses CEMOPLAF to implement some health campaigns. Religious institutions have also asked for CEMOPLAF's help in coordinating various development projects.

One discussant raised a couple of questions in response to De Vargas' presentation. He asked what are the real differences between the two projects compared in the study? Was the health-only project older and unchanged? Did the integrated project have new, more inviting facilities? He noted that people may have responded more to the integrated project simply because it was new. This participant also wondered about the population size of the communities served and the project personnel. He pointed out that if you have good people working on a project, you will most probably have a good impact no matter what the intervention. In order to control for this, you need to scale up so that you can actually test the output of different approaches instead of just the output of motivated staff. The participant called for ethnographic follow-up in order to determine "what in fact is going on." He concluded his remarks by recognizing CEMOPLAF's "wonderful, important effort" in developing a linked intervention and carrying out the research study.

In response to these questions, Teresa De Vargas noted that CEMPLAF used the same personnel for both the health-only and the integrated projects. She again raised the issue of selection bias due to the fact that "the Institute" chose the communities. She also emphasized that CEMOPLAF's health work is heavily focused on family planning. Denise Caudill added that it didn't cost very much to add the agricultural component to CEMOPLAF's health activities and displayed a chart showing a breakdown of costs.

Following the case study presentation, Denise Caudill facilitated a discussion and presentation of the components that make up a specific description, or definition of a population-environment intervention. The aim of the discussion was to recognize that there is a wide range of possible strategies for implementing a population-environment program. The final part of the discussion focussed on various scenarios of population-environment interventions. Participants broke up into three groups, each with a different scenario with the task of developing one or more hypotheses for linking population and environment activities.

In reporting back to the larger group, participants noted that the role of women and cost-effectiveness cuts across all three scenarios. One participant pointed out that the main hypothesis for USAID is that a linked population-environment intervention will lead to increased use of family planning and value-added to interventions. She posed the question: what do conservation groups get out of linked interventions?

In response, one participant pointed out the differences between The Nature Conservancy (TNC) and World Wildlife Fund (WWF). WWF has a mandate from their Board to do population while TNC has no such mandate. Other participants noted that communities have identified population and health as a need, therefore, development organizations including conservation groups are responding to that need. The issue of trust was raised again and the need to respond to community needs in order to build trust.

Participants discussed the importance of strengthening community capacity so people can manage their own lives. Healthy people are more productive but they are also better able to protect the environment. Institutional strategies are also related. For example CEMOPLAF improved its image by designing a population-environment project. Cultural change is also important—teaching women that they can have control over their bodies and teaching communities to control/manage their environment.

10 February 1999

U.S. Environmental Priorities in China: A Dialogue with American Foundations

The Honorable Leon Fuerth, Assistant to the Vice President for National Security Affairs

At a February 10, 1999 meeting co-sponsored by the Environmental Change and Security Project and the National Committee on U.S.-China Relations, Leon Fuerth, Assistant to the Vice President for National Security Affairs, described a discernable improvement in cooperation on environmental issues between the United States and China over the past two years. Increased bilateral cooperation has led to progress on a number of issues key to both countries: urban air quality; clean energy production; natural disaster mitigation and prevention; and water resource management. These efforts result in part from two bilateral agreements: the U.S.-China Forum on Environment and Development, initiated by Vice President Al Gore during his March 1997 visit to Beijing, and the Energy and Environment Initiative, signed by former Energy Secretary Fredrico Peña and Zeng Peiyan of the Chinese State Planning Commission during President Jiang Zemin's visit to the United States in October 1997.

Leon Fuerth

Other speakers featured at this meeting were Alan Hecht, Principal Deputy Assistant Administrator, Environmental Protection Agency; Alice Hogan, Senior Program Manager, National Science Foundation; David Jhirad, Deputy Assistant Secretary, International Energy Policy, Trade and Investment, Department of Energy; and The Honorable Melinda Kimble, Acting Assistant Secretary, Bureau of Oceans and International Environmental and Scientific Affairs, Department of State.

This meeting and all ECSP activities on China are funded by The W. Alton Jones Foundation and The National Oceanic and Atmospheric Administration.

16 February 1999

Agriculture and Global Security

Nils Petter Gleditsch, International Peace Research Institute, Oslo (PRIO)
Indra de Soysa, International Peace Research Institute, Oslo (PRIO)
Ismail Serageldin, Consultative Group on International Agricultural Research, The World Bank
William M. Wise, Woodrow Wilson Center and Former Deputy National Security Advisor to Vice President Al Gore

This meeting of the Environmental Change and Security Project marked the release of the first major publication by Future Harvest, the new public outreach arm of the Consultative Group on International Agricultural Research (CGIAR). Nils Petter Gleditsch and Indra de Soysa of the International Peace Research Institute, Oslo (PRIO) discussed their report, *To Cultivate Peace—Agriculture in a World of Conflict*, which explores the links between agriculture and global peace and security. The report, commissioned by Future Harvest, finds that: the nature of conflict has shifted in the post-Cold War world from ideological struggles to clashes over resources and deprivation; that much of the conflict is now occurring in countries where agriculture is an important economic endeavor; and that advancements in agricultural research can contribute to stability and global security. Comments on the presentations were be made by Ismail Serageldin, Chairman, CGIAR and William Wise, Public Policy Scholar at the Woodrow Wilson Center, and former Deputy National Security Advisor to Vice President Al Gore.

Nils Petter Gleditsch and Indra de Soysa opened the meeting by discussing intrastate rather than interstate conflict. They highlighted the changing characteristics of armed conflict with the majority of today's conflicts occurring within states rather than between them. They asserted that poverty is the main link between agriculture and conflict, and that improving agriculture may break the complex cycle that develops among poverty, agriculture and violent conflict. They also called attention to a distinct urban bias (often in the form of subsidies and price controls) in many countries that has an adverse effect on the health of rural economies and agricultural production. Gleditsch and de Soysa argued that subsistence crises have increasingly come to characterize conflict within countries and that conflict often derives from economic rather than political causes. Addressing the challenges of rural agriculture will help stem the flow of rural to urban migration. It would also reduce the number of disaffected poor in the countryside who are more willing to assume the risks of participating as a party to armed conflict.

Ismail Serageldin also emphasized the urban bias in many countries' policies and its effect of "plundering agriculture" to achieve short-term benefits for urban areas. However, this shortsighted approach often results in long-term problems. He stressed the need to explain the importance of agricultural production in the overall economic health and growth of less-developed countries. He also argued that with population growth and increases in consumption, the resources needed to grow additional food will become more and more scarce. He singled out freshwater as a particular challenge.

William Wise argued that conflict derives from diverse and complex, rather than simple or single causes. By focusing on South Asia and Africa, the study provided a particular picture of agriculture-conflict relationships, according to Wise. He challenged the notion that rural populations are active instigators of conflict, arguing that, in many cases, the rural poor lack the skill and resources to initiate armed conflict. Rather, they often become the pawns of urban or political elites who act from political interest. Mr. Wise warned against underestimating the continuing importance of politics as the cause of conflict. While sharing the goals of ensuring food security, he suggested that rural development should be pursued as a good in itself, rather than as a way of mitigating intrastate violence.

[Editor's note: Please visit the ECSP web site at http://ecsp.si.edu for the full text of the report To Cultivate Peace—Agriculture in a World of Conflict,*]*

17 February 1999

The State of War and Peace: Trends in a Post-Cold War World

DAN SMITH, DIRECTOR, INTERNATIONAL PEACE RESEARCH INSTITUTE, OSLO (PRIO)

What are the causes of armed conflict? According to Dan Smith, editor of a volume entitled, *The State of War and Peace Atlas*, the causes can be multiple and interrelated. Smith presented his findings on violent conflict and the efforts to address such challenges of the post-Cold War world at a noon discussion sponsored by the Environmental Change and Security Project.


Dan Smith

Smith, currently directs the International Peace Research Institute, Oslo (PRIO) in Norway where researchers are investigating armed conflicts to determine their causes and potential paths to peace. He and his colleagues have tallied armed conflicts in the post-Cold War world. From 1990-1997, there were 101 armed conflicts with only two of these wars involving no states. Seven of the 101 conflicts were between recognized states such as the conflict between Eritrea and Ethiopia and just two were clear cases of wars of independence. The remaining 92 were "internal" by one definition or another. All of these wars killed close to six million people and over 75 percent of those killed or injured were civilians. Smith maintained that while interstate conflicts are not a thing of the past, they are much more rare in the late twentieth century. Another point he stressed is that in today's more transparent world where the international system is not based on bi-polarity, conflicts have not increased but are simply more visible.

What causes these conflicts? Several researchers point to totalitarian or less democratic societies as the culprits where there is a correspondingly high abuse of human rights. To assess the correlation of human rights abuse to armed conflict the PRIO researchers first had to develop a scale of the human rights abuses. On the most violent end were the extrajudicial killings of political opponents and prisoners of war such as is found in Russia and Brazil, and torture in China; with arbitrary detention in Argentina, and reports of police violence in the United States and Australia on the other end of the spectrum. Smith and his colleagues found that 77 percent of such human rights violator states had armed conflicts between 1990-1995 and that these states accounted for 68 percent of all the armed conflicts documented. In other words, societies based on the rule-of-law rather than on arbitrary authority have much more potential for peaceful politics.

It is often asserted that a major cause behind war is ethnic difference. Smith's studies tested this assumption, which would mean that the most ethnically diverse countries experience war more frequently. Of the most ethnically diverse-those where is no ethnic majority-only 38 percent experienced armed conflict in the first half of the 1990s, whereas there was armed conflict in 50 percent of countries whose ethnic minorities make up between ten and 50 percent of the population. In other words, peaceful diversity has proven to be possible. Nonetheless, in ethnically diverse countries, political leaders can often mobilize support on the basis of ethnic and religious division. It is not ethnic difference that is dangerous, then, but ethnic politics.

Another factor more probable in demonstrating why states go to war, according to Smith is the level of human development and poverty in a country. In general he and his colleagues found that those states with a low development both economically and socially combined with a high poverty rate exacerbated tensions, leading to higher incidences of armed conflict. To tally the number of conflicts that occurred in states of varying development, Smith grouped countries into three categories of high, medium and low development. What he found was that only 14 percent of those countries with high human development had any sort of armed conflict, while 57 percent of those states with low development documented, had engaged in armed conflict.

Overall Smith identified a number of factors that can lead to armed conflict. Using the methodology developed by David Dessler of the College of William and Mary, Smith demonstrated the multiple causality of armed conflict and the need to distinguish between the different causes. The first category of causes-channels, as Dessler designated them-are the basic lines of social division. These include regional and social economic distribution of resources, politicized ethnic differences, the legacy of history, environmental considerations, and regime type combined with human rights. The second factor, labeled political mobilization by Smith, refers to the political goals and behavior of the factions. Goals could be secession, regime change, system change, or protection of the status quo. Behavior could be defined by propensity to pursue rivalries or accept compromise, the level of legitimacy sought, the degree to which common rules are accepted. The third factor is the various triggers that determine when a conflict will start. The fourth factor consists of the catalysts that affect the intensity, direction, and termination of a

conflict. Triggers are often apparently arbitrary political events, such as the assassination that triggered World War I. Catalysts form a highly diverse category ranging from terrain and climate, through the military balance of power to foreign intervention.

The most salient factors according to Smith appear to be the level of democracy and the degree to which countries observe human rights, combined with high levels of development. Less salient are issues such as ethnic conflict, although they are not without value.

Summing up his lecture, Smith quoted St. Augustine who wrote that, "Peace without justice is not worthy of the name of peace." Indeed his findings seem to indicate that a number of factors, most importantly that states that are more democratic, transparent and respectful of human rights, are generally the more peaceful states. But Smith noted that though justice and democracy are the basis of peace, the process of democratization can be destabilizing and dangerous. To regard a quick democratization as either possible or desirable is misleading he argued. Nonetheless, in the long term the transition to democracy is a part of creating a more peaceful world.

[For more information on *The State of War and Peace Atlas*, please refer to Issue 3 of the *Environmental Change and Security Report*.]

18 February 1999

Former Dutch Prime Minister Highlights Sustainability

RUUD LUBBERS, FORMER PRIME MINISTER,
THE NETHERLANDS

Ruud Lubbers, Prime Minister of the Netherlands from 1982-1994, stressed the need to pursue the sustainability agenda set out at the 1992 U.N. Conference on Environment and Development in Rio de Janeiro. Lubbers spoke briefly at the annual International Studies Association (ISA) convention reception co-sponsored by the Woodrow Wilson Center's Environmental Change and Security Project and the Environmental Studies Section. Lubbers now grapples with the challenges of globalization from his position as Professor of Globalization Studies at the University of Tilburg in the Netherlands and at the John F. Kennedy School of Government at Harvard University. The Environmental Studies Section of ISA brings together leading researchers on international environmental politics.

Left to right: Arild Underdal and Ruud Lubbers

More about the section can be accessed at http://csf.Colorado.EDU/ess/. The ISA convention was held February 16-20 at the Omni-Shoreham Hotel in Washington D.C.

21-22 February 1999

Workshop on Environmental Cooperation and Regional Peace

On February 21 and 22, 1999, an international group of scholars met at the Woodrow Wilson International Center for Scholars to examine opportunities to promote regional peace through environmental cooperation. *[Editor's Note: See the end of this summary for a list of paper presenters and discussants.]* The workshop, which is part of an ongoing collaborative research initiative on environmental peacemaking, was co-sponsored by the Wilson Center's Environmental Change and Security Project (ECSP) and the University of Maryland's Harrison Program on the Future Global Agenda. Paper authors, discussants, and other workshop participants discussed the conceptual basis for using environmental initiatives to catalyze regional peace and examined practical opportunities and constraints in specific world regions.

One goal of the workshop was to bridge the gap between studies of environmental conflict and environmental cooperation. According to the framework paper providing the conceptual foundation for the workshop, "What we know about environmental conflict is largely divorced from what we know about environmental cooperation...The growth of knowledge about environmental conflict and environmental cooperation as two separate and unconnected strands of inquiry hurts both the quest for a more peaceful international order and the quest for global environmental sanity."

Scholarship on environmentally induced conflict and "environmental security" indicates that environmental degradation, pollution, and resource depletion may spur or exacerbate violent conflict. It stands to reason, therefore, that environmental cooperation might be a useful tool in blocking these pathways to environmentally induced conflict. But little attention has been paid to an important corollary: that environmental cooperation can not only inhibit environmentally induced conflict but also catalyze broader forms of regional peace. Although this proposition has not received rigorous examination, a good conceptual case can be made for a strategy of environmental peacemaking. Environmental challenges force governments and societies to acknowledge their interdependence, generate knowledge cooperatively, establish trust, and pay more attention to the future. These features of environmental cooperation may make it a useful tool in efforts to create more cooperative, peaceful security orders at the regional level. If so, environmental cooperation could offer a powerful "double bonus" for peace—inhibiting pathways to environmentally induced conflict while at the same time building more cooperative relationships based on deeper trust and mutual interests.

The workshop targeted world regions already moving toward a new security order, including post-apartheid Southern Africa, post-Cold War Northeast Asia, and post-Soviet Eastern Europe and Central Asia. The common theme across these diverse regions is that new and inherently multilateral forms of interstate dialogue and trans-societal exchange are already underway or poised to occur. The question in these areas is not whether a new regional order is being born but rather what its specific features will be. Thus, one premise of the workshop was that environmental peacemaking has been too quickly dismissed because of its failure to transform hard bilateral conflicts such as the Israeli-Palestinian dispute or a Cold War superpower conflict. Such cases may shed light on the limits of environmental cooperation, but they tell us little or nothing about its catalytic potential in more fluid, multilateral settings.

The workshop focused on two very different potential pathways to environmental peacemaking. The first, referred to as "changing the strategic climate," stressed ways in which environmental cooperation might alter processes of strategic bargaining between governments, change the perceived costs and benefits shaping that bargaining, enhance confidence in the benefits of cooperation, and reduce prevailing barriers to collective action. The second pathway, referred to as "strengthening post-Westphalian governance," stressed processes that build confidence, enhance trust, and deepen cooperation not merely between governments but across societies. Here the emphasis is on ways in which environmental collaboration might help to institutionalize new norms of cooperation, alter state and societal institutions, and build peaceful trans-societal linkages. One of the workshop's primary goals was to identify possible synergies and tensions between these two very different pathways to peace.

Six regional papers were presented. Kenneth Wilkening of Nautilus Institute presented a paper on Northeast Asia, co-authored with colleague Peter Hayes. The paper presented an overview of security and environmental issues in the region, stressing the complex array of environmental challenges and the relatively low degree of formally institutionalized cooperation. The paper then examined the specific role of the Berkeley, California-based Nautilus Institute, a nongovernmental organization (NGO) promoting environmental cooperation in Northeast Asia. Wilkening stressed that the role of Nautilus Institute's work is to "tie together...the complex set of energy, environmental, and security issues in the region with the intent of enhancing peace and promoting sustainable societies." He concluded that Nautilus's primary role was as a facilitator, a catalyst for discussion, and

a "carrier of ideas." An analysis of the institute's diverse regional initiatives in promoting cooperative energy security suggests that "there is indirect evidence that the intellectual content of the work has seeped into the policy making machinery of Northeast Asia." Discussant Miranda Schreurs of the University of Maryland emphasized two themes: on the one hand, emerging challenges to the region's strongly statist, "Westphalian" character historically and on the other, the great challenge of promoting a climate of regional dialogue. She suggested that critical questions include the ramifications of emerging regional cooperation for domestic systems of governance, as well as the relationship between bilateral and multilateral cooperation.

Ashok Swain of Uppsala University presented a paper on shared river systems in South Asia. Swain pointed out that despite serious regional tensions and the frequently poor state of interstate relations, bilateral cooperation on water supply issues has endured and expanded—casting doubt on the thesis of environmental conflict and suggesting a foundation for broader cooperative efforts. His paper analyzed cooperative ventures between Pakistan and India for the Indus River, India and Nepal for the Mahakali, and India and Bangladesh for the Ganges. Swain argued that the key questions are whether the region can deepen the institutionalization of cooperation, broaden its base from separate bilateral arrangements to a multilateral framework, and shift the focus from the narrower concern with water supply issues to a broader frame of watershed management. Discussant Indra de Soysa of the International Peace Research Institute, Oslo (PRIO) stressed the importance of linking the analysis of interstate diplomacy to internal societal cleavages, where most of the region's violence potential resides. Discussion also focused on the importance of substate actors, including local governments, nongovernmental organizations, and commercial interests, in shaping the dynamics of interstate bargaining over water issues.

Left to right: Ashok Swain, Geoffrey Dabelko, and Ken Conca

Larry Swatuk of the University of Botswana presented a paper on the situation in Southern Africa, with a particular focus on land and water issues. Swatuk pointed out that the region's environmental politics were driven by the complex interplay of three very different currents: the opportunities of the "post-apartheid democratic moment," the pressures of neoliberal structural adjustment, and the post-UNCED emphasis on sustainable resource management. He concluded that overlapping ecological interdependencies were in fact creating a foundation for sustainable resource regimes, but with equivocal implications for regional peace. On the one hand, there is evidence that "civil society in league with wider, international interests can help to drive the pace and direction of the discourse on certain issues." But this optimism is tempered severely by the ability of state elites to manipulate issues for political gain and the powerful logic of resource capture reinforced by the global context of neoliberalism. Discussant Ken Conca of the University of Maryland emphasized the importance of conflicting external pressures in the environmental and economic realms. He also noted that although state elites in the region appear to have lost a substantial measure of agenda-setting power as a result of these international pressures, they also appear to retain substantial power to steer the new agendas toward traditional purposes of social control, resource capture, and elite privilege.

The second day of the workshop focused on environmental cooperation surrounding three regional seas in Europe and Central Asia. Douglas Blum of Providence College and the Watson Institute at Brown University presented a paper on environmental politics in the Caspian Sea region. Blum pointed out that the Caspian Sea region has seen significant recent movement toward regional environmental cooperation through the Caspian Environmental Program (CEP). Blum suggested that despite regional geopolitical jockeying, the challenges of providing public goods and preventing social upheaval create space for environmental cooperation. He described the CEP as "an innovative combination of traditional statist and post-Westphalian arrangements, replete with new norms for public policy and collective behavior." As such, it holds potentially profound implications for regional politics. Discussant Matthew Auer of Indiana University emphasized two potential obstacles: the region's weakly institutionalized contractual environment for interstate bargaining and Russia's power to destabilize regional environmental cooperation. Auer also stressed the importance of examining whether emerging forms of regional environmental cooperation would mitigate or exacerbate ethnic tensions, a key source of potential violence within states and across borders in the region.

The next paper, by Erika Weinthal of Tel Aviv University, focused on efforts by Central Asian states to create a new water-sharing regime in the wake of the ecologically and socially disastrous Aral Sea crisis. Weinthal suggested that the surprisingly robust cooperative arrangement stemmed from two sources: first, the twin pressures facing state elites to undertake economic restructuring and nation-building, and second, the catalytic role of international institutions. In particular, she stressed that environmental cooperation helped state elites to deepen the "myth of statehood" in the region by assuming traditional state tasks and embracing international norms. Weinthal concluded that a potentially powerful way to use environmental cooperation to strengthen regional peace would be to link energy and water cooperation, thereby creating cross-sectoral trade-offs and diminishing asymmetries. Discussant Kate Watters of Initiative for Social Action and Renewal in Eurasia (ISAR) suggested that any such expansion of issue linkages must also incorporate socio-economic and civil-society concerns to be genuinely effective. She also noted that, despite the powerful effect of NGOs in demonstrating alternative modes of leadership, establishing a transnationally oriented civil society remained difficult given the restrictive character of regimes in the region.

Stacy VanDeveer of Harvard University presented a paper on the Baltic Sea region. He suggested that the region has seen

twenty-five years of well-developed interstate and scientific cooperation, complemented in the past decade by a deepening trans-societal, nonstate dimension. The result has been a region of largely consolidated peaceful relations where a previous generation of analysts saw great potential for resource and environmentally based conflicts. He suggested that the central challenge today is the lack of commitment on both sides to keeping Russia fully engaged. Discussant Thomas Jandl of the Bellona Foundation elaborated on Russia's role, arguing that the region faced a dilemma. Framing environmental issues primarily in terms of Western concerns threatened to establish a dangerous image of Russia as an environmental threat, whereas greater attention to Russia's environmental concerns threatened a Russian nationalist backlash against meddling in domestic affairs. The key challenge of environmental peacemaking is to find a way around this dilemma.

Comparative assessment of these diverse regional cases yielded several common themes. First, there is little evidence in these cases for the common claim that environmental cooperation is merely a "functionalist" strategy, in which issues of relatively low political salience are exploited to start states down the road of inevitably greater cooperation and regional integration. Such approaches have been extensively criticized for their tendency to assume that relatively unimportant cooperative arrangements can start governments down a "slippery slope" to peace. In contrast, these cases reveal regional environmental issues to be of high salience for the governments involved, given the way that they intersect directly with economic development strategies, external pressures, and the foundation of state authority. This may make environmental cooperation more difficult to achieve, but it also suggests that cooperation once achieved may play a more powerful cooperation-forcing role than previously assumed.

A second theme to emerge from across the cases is that, despite a good theoretical basis for the idea that environmental cooperation can seed broader forms of regional peace, in most of these regions it is still too early to demonstrate such connections empirically. Each case provides some evidence that environmental concerns can provide a basis for regional dialogue. Whether such dialogue generates institutionalized environmental cooperation, and whether the specific form of those institutions facilitates regional peace, is a far more complex question. Several of the regional studies, for example, indicated a fine line between cooperative environmental management and exclusionary resource capture, suggesting that much depends on the specific institutional form and the array of state and societal actors engaged.

A third theme was the complex relationship between the two scrutinized pathways to regional peace, the statist approach of "changing the strategic climate" and the trans-societal approach of "strengthening post-Westphalian governance." In some of the regions studied, a dynamic of state building suggested that the former pathway may create a positive foundation for the latter. But in other cases, marked by either particularly "hard" or particularly dysfunctional states, greater potential tensions were revealed between the statist and trans-societal approaches.

Below is the agenda for the Workshop on Environmental Cooperation and Regional Peace:

Sunday, February 21, 1999

Welcome, introductory comments, and project overview
Geoffrey D. Dabelko, Environmental Change and Security Project
Ken Conca, University of Maryland

Can a "Small" NGO Promote "Big" Environmental Peace-Making in Northeast Asia?
Kenneth Wilkening, Nautilus Institute
Comments: Miranda Schreurs, University of Maryland

Environmental Cooperation in South Asia
Ashok Swain, Uppsala University
Comments: Indra de Soysa, International Peace Research Institute, Oslo (PRIO)

Environmental Cooperation for Regional Peace and Security in Southern Africa
Larry Swatuk, University of Botswana
Comments: Ken Conca, University of Maryland

Monday, February 22, 1999

Beyond Reciprocity: Governance and Cooperation in the Caspian Sea
Douglas Blum, Providence College & Brown University
Comments: Matthew Auer, Indiana University

The Promises and Pitfalls of Environmental Peace-Making in the Aral Sea Basin
Erika Weinthal, Tel Aviv University
Comments: Kate Watters, ISAR

Environmental Cooperation and Regional Peace: Baltic Politics, Programs and Prospects
Stacy VanDeveer, Harvard University
Comments: Thomas Jandl, Bellona Foundation

8 March 1999

Environmental Diplomacy in the 21st Century

The Honorable Frank E. Loy, Under Secretary of State for Global Affairs
The Honorable Lee H. Hamilton, Director, Woodrow Wilson International Center for Scholars
Thomas E. Lovejoy, Chief Advisor on Biodiversity to the President of the World
Bank and Co-Chair of the Environmental Change and Security Project Advisory Committee

Environmental diplomacy in today's world presents a host of challenges, according to Frank E. Loy, Under Secretary of State for Global Affairs. At a March 8 meeting sponsored by the Woodrow Wilson Center's Environmental Change and Security Project, Loy highlighted five themes that are key factors in conducting environmental diplomacy into the 21st century. He identified as critical 1) U.S. ratification of environmental treaties; 2) the role of science in supporting such agreements; 3) continued suspicions between the developed countries of the North and developing countries in the South; 4) alliances to overcome hegemonic perceptions of the United States; and lastly, 5) globalization's impact on environmental progress. Loy stressed that there are ample opportunities for scholarly research to contribute to a better understanding of these themes. He urged the research community to work closely with practitioners to explore the many ways these themes help or hinder effective redress of environmental challenges.


The Honorable Frank E. Loy

Loy first focused attention on the recent record of environmental treaty ratification. He expressed frustration that even less controversial treaties remain unratified. He noted that the only recent environmental treaty ratified by the Senate regarded fish stocks that straddle international borders. Arguments made against agreements commonly hold that 1) the United States is required to give up sovereignty; 2) agreements cost the United States scarce resources; and 3) agreements create new bureaucracies. While Loy granted that one, two, or all three of these points may come to pass for any given treaty, the balance of those costs is difficult to put into perspective when a cost-benefit analysis is not done for the costs of not addressing the environmental problem. In the past, the Senate has not weighed whether the costs of rejecting a treaty would outweigh the costs of approving it. He cited the Law of Sea Convention as a prime example where earlier objections raised by the Reagan administration have been addressed yet the Senate fails to ratify it.

Loy highlighted the need to achieve and undergird agreements with scientific understanding. The lack of scientific understanding, or its contested nature, has undercut progress on a number of environmental treaties. The recent failure to successfully negotiate a Biosafety Protocol in Cartagena, Columbia presents a prime example according to Loy. The negotiations broke down over scientific disagreements between a group led by Europe and a group led by the United States. The question of whether genetically altered agricultural products could be harmful to human health remained at the center of the parties' differences.

The question of "balance" in presenting scientific arguments presents additional challenges for media coverage of environmental topics. The need to give "both sides" of an issue privileges a small segment of scientists who have conclusions that run counter to the overwhelming majority of scientists in a given issue area. This tendency, according to Loy, is particularly evident around the science of climate change where the weight of opinion from the Intergovernmental Panel on Climate Change is equated with a small number of naysayers on global warming.

Loy reminded the audience that the United States is currently a singular superpower, comparable in relative terms to other unipolar moments such as the British and Roman Empires. Because of this power disparity, he explained, the U.S. is constantly being accused of hegemonic behavior. Loy asserted that the United States must address this perception while pursuing national interests by forming alliances with other countries. He again cited the February 1999 Cartagena negotiations on international biotechnology safety, in which the United States needed the cooperation of smaller countries like Uruguay and Chile to maintain a strong negotiating position.

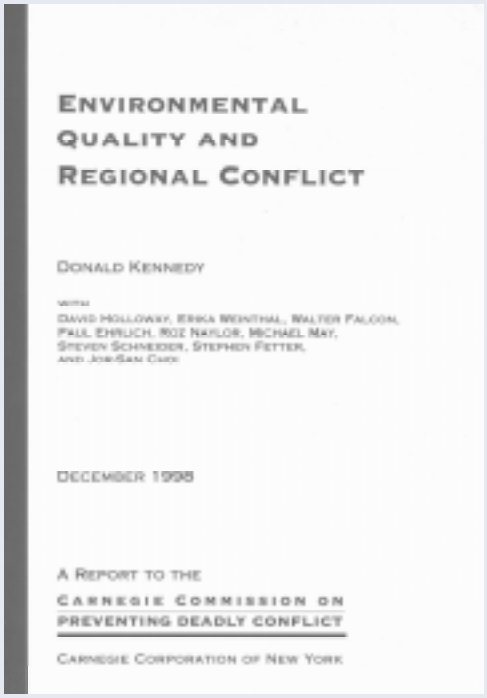
As his final theme, Loy highlighted trends in globalization, and specifically increased international trade in goods and capital. This phenomenon holds tremendous impacts for environmental diplomacy. Many harbor fears that increased global economic competition will lead to lower environmental standards. The argument, as described by Loy, suggests that businesses will move production to countries with lower environmental standards to achieve lower production costs or economic interests will lobby the U.S. government to lower its environmental standards so that U.S. production can remain competitive. Hence some environmentalists think that trade needs to be curbed, not promoted. Loy went on to describe two competing schools of thought with regard to free trade: 1) that increased trade would lead to more wealth, leading to more consumption, and therefore more environmental degradation; or, 2) increased trade would lead to more wealth, a larger middle class and a greater concern for

the environment, and consequently more environmental protection. Loy called for more investigation of these competing arguments to increase understanding of the complex linkages between trade and the environment.

For a full transcript of Loy's remarks please visit the Environmental Change and Security Project's web site at: http://ecsp.si.edu. Also, please see the Official Statements section in this issue.

NEW PUBLICATION: *Environmental Quality and Regional Conflict*, by Donald Kennedy, with David Holloway, Erika Weinthal, Walter Falcon, Paul Ehrlich, Roz Naylor, Michael May, Steven Schneider, Stephen Fetter, and Jor-San Choi. This report, published in December 1998, was commissioned by the Carnegie Commission on Preventing Deadly Conflict.

We live in a time of unprecedented environmental change, change of a kind that might well exacerbate other sources of conflict according to the authors of this new report. Donald Kennedy and his colleagues examine the role of environmental deterioration in regional conflicts, projects rates at which the environment is being altered by human activity, and look at the convergence of these changes with other important variables, such as state capacity. The report examines underlying environmental trends on issues such as water, agriculture, and energy demands. Contents of the report are as follows:



Kennedy, Donald, et al. *Environmental Quality and Regional Conflict*. New York: Carnegie Corporation, 1998.

To obtain a free copy of this report, contact: Carnegie Commission on Preventing Deadly Conflict, 1779 Massachusetts Ave. NW, Ste. 715, Washington, DC 20036-2103. Tel: 202-332-7900; Fax: 202-332-1919; E-Mail: pdc@carnegie.org. This and other publications are also available on the Commission's World Wide Web site: http://www.ccpdc.org.

17 March 1999

The New Petroleum: Energy and National Security

THE HONORABLE RICHARD G. LUGAR, UNITED STATES SENATOR (R-INDIANA)
AMBASSADOR R. JAMES WOOLSEY, SHEA & GARDNER

Energy is vital to a country's security and material well being. Ethanol has always provided an alternative to gasoline, but recent and prospective breakthroughs in genetic engineering and the processing of biocatalysts (genetically engineered enzymes) are making it possible to use cellulosic biomass (plant products) to produce cost efficient and environmentally safe ethanol. At a meeting sponsored by the Environmental Change and Security Project and Nonproliferation Forum, Senator Richard G. Lugar (R-IN) and Ambassador R. James Woolsey argued for increased attention and government research on competitively priced ethanol. The speakers highlighted perceived national security, economic, and environmental benefits that should make this "new petroleum" a key to American energy policy.


Richard G. Lugar

Senator Lugar kicked off the discussion by noting that a wealth of scientific data indicates both the worlds' supply of oil is nearly half exhausted and that with each passing year the demand for petroleum-derived energy increases. Cellulosic ethanol offers real, potential benefits and should compel the United States to make a concerted research effort to realize its promise. The Senator outlined three areas where cellulosic ethanol has the ability to promote significant positive change: 1) environmental improvement, 2) rural development, and 3) international stability.

Since the transportation sector accounts for one-third of greenhouse gas emissions, Senator Lugar noted the powerful demonstration of "green chemistry" in producing a powerful sustainable technology. "Cellulosic ethanol, a renewable fuel derived from grasses, plants, trees, and waste materials offers a positive long term approach to the problem of global warming." Furthermore, Senator Lugar stressed that widespread conversion to the alternative fuel does not assume a shift from the current automobile culture or increased costs. Ethanol is a versatile liquid fuel and can easily be utilized within the existing infrastructure. Assuming foreseeable advances in biocatalysts to break down plant products, rural farmers will be able to benefit from cellulosic ethanol as a cash crop by selling agricultural waste. Harvesting plant products and waste has several additional environmental benefits, such as soil enrichment, checked soil erosion, and improved air quality by not burning the plant waste.

Finally, Senator Lugar reminded the audience that energy is vital to a nation's security and standard of living. He cited a report from the President's Committee on Science and Technology that claimed, "the security of the United States is at least as likely to be imperiled in the first half of the next century by consequences of inadequacies in energy options available in the world as by the inadequacies of the abilities of U.S. weapons systems." Lugar urged a dedication of research and development to find better ways to produce and consume this alternative energy source.

Ambassador Woolsey first focused attention on differences of ethanol production through the years. Historically, ethanol has been made from, but Woolsey explained that starch is less than one percent of biomass. The bonds of glucose within the starch break easily and therefore can be readily fermented and distilled into alcohol. Eighty-five percent of what grows on plants is cellulose or hemi-cellulose, but cellulose's carbon bonds in glucose are more difficult to break. Scientists have found enzymes to break these bonds, but the means remain inefficient. Hemi-cellulose presents a more difficult problem, because it is not naturally fermented. Thus, Ambassador Woolsey described the two problems of 1) finding away to ferment hemi-cellulose, and 2) breaking glucose's carbon bonds industrially and efficiently. It is critical to overcome these challenges, because cellulose and hemi-cellulose constitute 85 percent of plant and biomass waste material including prairie grasses, newspapers, woodchips, seaweed, two-thirds of urban waste, and agricultural residue. The first has now been overcome by a genetically engineered "bug"—a microorganism called KO11. The second problem remains to be conquered.


R. James Woolsey

Ambassador Woolsey addressed a number of concerns often associated with ethanol and new ones raised by these new technological developments. He stressed that a strong move to ethanol would not require fundamental retooling of the country's transportation infrastructure. United States CAFE standards have already forced manufactures to produce flexible fuel vehicles and the distribution network would require little conversion.

Ambassador Woolsey also spoke to concerns regarding the amount of arable land that would be necessary to produce large quantities of ethanol. As an example, he cited the country's soil bank grass (approximately 15 percent of U.S. land). Using just biomass from this source, enough ethanol could be produced yearly to replace fifty percent of the gasoline currently consumed in the United States.

[Editor's Note: For more information on the "New Petroleum," see the January/February 1999 issue of Foreign Affairs.*]*

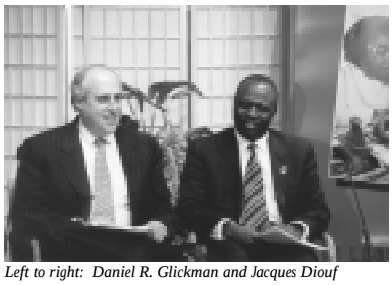
26 March 1999

Release of the U.S. Action Plan on Food Security

The Honorable Daniel R. Glickman, Secretary, Department of Agriculture (USDA)
His Excellency Jacques Diouf, Director-General, United Nations Food and Agriculture Organization
The Honorable J. Brian Atwood, Administrator, U.S. Agency for International Development
The Honorable Frank E. Loy, Under Secretary for Global Affairs, Department of State
The Honorable August Schumacher Jr., Under Secretary for Farm and Foreign Agricultural Services, Department of Agriculture
Christine Vladimiroff, Prioress of the Benedictine Sisters of Erie
The Honorable Shirley R. Watkins, Under Secretary for Food, Nutrition and Consumer Services, Department of Agriculture

On Friday, March 26, 1999, Secretary of Agriculture Dan Glickman and Director General of the U.N. Food and Agriculture Organization (FAO) Jacques Diouf released the U.S. Action Plan on Food Security at the Woodrow Wilson International Center for Scholars. The Action Plan is the United States' official response to the 1996 FAO World Food Summit held in Rome, Italy. The plan provides a long-term blueprint for reducing food insecurity and hunger both in the United States and internationally.

"It is fitting that we release the U.S. Action Plan on food security at the memorial to President Woodrow Wilson," said Secretary Glickman. "It was Wilson's vision of an enlightened international order, where nations worked together to overcome obstacles and create a better world, that ultimately led to the creation of organizations like the United Nations and the Food and Agriculture Organization." "Today," he continued, "the Wilson Center is a symbol of the importance of public-private partnerships and the great things that can be achieved when governments, individuals, industry, and volunteer organizations work together toward a common purpose. Our common purpose is ending hunger and that is no easy task."



Left to right: Daniel R. Glickman and Jacques Diouf

Secretary Glickman discussed the Action Plan, calling it a "road map for ending hunger by using innovative partnerships to unite the public and private sectors." The plan takes a comprehensive approach to ending hunger, attempting to eliminate the conditions that cause it rather than just providing emergency, short-term assistance. It uses existing resources in a more effective and efficient way, expanding their impact through the creation of new public-private partnerships and improved coordination among and between Federal, State and local governments, communities, and nongovernmental organizations.

Secretary Glickman also highlighted the Community Food Security Initiative, USDA's new program for implementing the domestic portion of the Action Plan. The initiative will help communities to develop creative responses to hunger and malnutrition by harnessing the strengths of many USDA programs. It will help communities build long-term food security by enhancing their local food security infrastructure.

Dr. Diouf spoke highly of United States efforts to create a viable plan for meeting the World Food Summit goal of halving global undernutrition by 2015. He also praised the decision to go beyond that goal domestically and seek to halve all forms of food insecurity in the United States by 2015.

Following the speeches, the co-chairs of the Interagency Working Group on Food Security (IWG), the body that produced the Action Plan, led off a discussion of the report with comments from their respective agency or department perspectives. Under Secretary of Agriculture August Schumacher, Under Secretary of State Frank Loy, and US Agency for International Development Administrator J. Brian Atwood spoke of the need for more resources to combat hunger and food insecurity internationally. Co-chair of the IWG domestic sub-group and Under Secretary of Agriculture Shirley Watkins, and co-chair of the Food Security Advisory Committee, Christine Vladimiroff delivered pleas for a compassionate approach to ending hunger.

The full text of Glickman's speech can be found at http://www.usda.gov/news/releases/1999/03/0133. A pdf version of the plan is available at http://www.fas.usda.gov/icd/summit/usactpl.pdf. For additional information on the plan see http://www.fas.usda.gov/icd/summit/usactionq&a.html.

29 March 1999

The Environmental Outlook in Russia: An Intelligence Community Assessment

George C. Fidas, Deputy National Intelligence Officer for Global and Multilateral Issues, National Intelligence Council
D.J. Peterson, Resident Consultant, The RAND Corporation
Kenneth A. Thomas, Special Advisor to the Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs
Linda D. Wiessler-Hughes, Special Assistant to the National Intelligence Officer for Science and Technology, National Intelligence Council

The three immediate environmental and health threats facing Russians today are water pollution, air pollution and municipal waste according to D.J. Peterson of the RAND Corporation. Peterson made his comments at a meeting convened by the Environmental Change and Security Project, for the release of the National Intelligence Council (NIC) assessment of environmental conditions in Russia entitled "The Environmental Outlook in Russia." Linda Wiessler-Hughes and George Fidas, both from NIC outlined the goals of the environmental assessment series and answered questions about data collection for the Russia assessment. Kenneth Thomas, from the Department of State, provided critical commentary on the analysis, and making suggestions for items to be included in future assessments.

Left to right: George C. Fidas and Linda D. Wiessler-Hughes

Wiessler-Hughes began the session by giving a brief overview of the report and the NIC series of assessments. Prepared for U.S. senior government officials, the report outlines trends in Russian environmental conditions and identifies issues deemed critical from a United States security perspective. The NIC conducted a prior assessment of Central and Eastern Europe and plans future reports on South Africa and China. While noting some of the findings, Wiessler-Hughes highlighted the data collection and analysis role of MEDEA , a group of about 40 U.S. environmental and global change scientists who have security clearance. The group is an outgrowth of a CIA-sponsored Environmental Task Force formed in 1992 to use classified systems to examine key environmental questions.

Building upon the Wiessler-Hughes' presentation, Peterson identified the key environmental problems that plague Russia. Water pollution is the leading environmental concern with municipalities acting as the main culprit. Just over one-half of Russia's population has access to safe drinking water while wastewater treatment systems are insufficient to meet growing needs for municipal sewage. Secondly, although industrial air pollution has gone down as a result of the economic downturn, air pollution is still very high because auto emissions have shot up with the dramatic increase in cars combined with a reduction in industrial sector spending on environmental protection. The severity of air pollution is such that in 1996, the air pollution exceeded national standards in more than 200 cities. The third major immediate threat Russians face is municipal waste, the result of poor infrastructure and rising consumption. Helping municipalities provide basic services will have to be a critical element of funding in resolving the severe health and environmental deterioration.

Linda D. Wiessler-Hughes

Having emphasized the basic environmental threats, Peterson then discussed the international impact of Russia's pollution, particularly on international water systems and air quality. The Caspian, Black and Baltic Seas are heavily contaminated from Russian industrial effluents, other hazardous waste, and municipal waste. Nuclear waste leakage is polluting the North Sea as well as the Sea of Japan. Rivers such as the Volga are not only polluted but carry the pollution to other waterways. Another major global impact emanating from Russia is the effect of industrial emissions including chlorofluorocarbons (CFCs). Russia continues to produce more than half of the world's supply of CFCs, the chemical responsible for depleting the ozone layer.

Unfortunately, given extremely strained financial resources, not much is being done to counter this environmental deterioration. Fewer technologies to reduce pollution are being developed today then under the Soviets, and while a plethora of strict laws have been passed, their effectiveness has been extremely limited. The laws do not provide adequate guidance for implementation and set unrealistic goals. The influence of strong industrial and military groups hampers the implementation of the laws and there is a continuing move towards greater secrecy. It is more difficult to obtain information and even more difficult to publish examples

of environmental pollution. As a result of the economic crisis and the greater restrictions in place to prevent disclosure, environmental activism has been on the wane since the Soviet period. Few citizens have the stomach to stand up against intimidation and while struggling to provide basic necessities on a daily basis.

Summing up his remarks, Peterson stressed that substantial aid is needed from the international community and listed three challenges that the Russian government must overcome in order to resolve environmental degradation. First, it must curtail lawlessness by enacting realistic, enforceable laws, even revamping the tax code. Second, the government must provide real incentives for domestic and foreign investment that focuses on economic development, not just industrial development. Finally, dramatic steps to ease poverty and reverse the economic decline are necessary to institute change at the grassroots level.

Next, Ken Thomas enumerated the issues that have to be addressed in intelligence assessments and the important role of data. Most important according to Thomas, is the compilation and presentation of data to demonstrate the nexus between problems and U.S. interests. He criticized some pedagogical aspects of the report, noting the lack of a uniform use of nomenclature. Areas that need the most attention need to be prioritized and the report should be integrated into a holistic U.S. policy. In other words, the intelligence assessments should go one step further and point out the implications of what may be conflicting policy and policy goals. He noted that an independent assessment monitoring and verifying the data should be conducted in tandem with the intelligence reports. Finally, Thomas concluded that the publication and release of this assessment was testament to the progress within the U.S. government toward integrating environmental concerns into the traditional foreign policy agenda.

Left to right: Geoffrey Dabelko, D.J. Peterson, and Kenneth A. Thomas

The *Environment & Security* (E&S) journal is a social scientific journal devoted to the study of environmental forms of insecurity and to the national and international efforts to address these insecurities. The bilingual (French/English) journal primarily addresses the following topics: the evolution and meaning of the concept of environmental security and the relationship between domestic and international environmental security issues; the ways in which environmental security is perceived in different countries; the impact of environmental changes on the probability of conflict and cooperation at the national and international levels; the contribution of environmental security to the definition of new foreign and security policies; policies for the management of shared resources and the consequences of these policies; the links between armed conflicts and the integrity of natural ecosystems; organizational and legal mechanisms that enhance environmental security; and philosophical issues involving environmental security and other human values such as equity and social and economic development. This journal tries to build on a new approach to environmental questions and to deal with their social, political and economic implications by linking the approaches of the natural and social sciences. Below are the English-language articles in Volume 1, Number 3 (1999).

15 April 1999

Developing a Strategic Framework for Population-Environment Intervention

Duff Gillespie, Deputy Assistant Administrator, Center for Population, Health, and Nutrition, US Agency for International Development (USAID)
Denise Caudill, Consultant, Global Neighbors
Frank Zinn, Director, Population Fellows Program, University of Michigan
Irene Koek, Chief Policy Advisor on Population, Health, and Human Development, Bureau for Policy and Program Coordination, USAID
Benjamin Stoner, Regional Coordinator, Global Center for the Environment, USAID
Samuel Meyers, Environmental Health Division, USAID

This meeting, "Developing a Strategic Framework for Population-Health- Environment Interventions" was held April 15, 1999 at the Woodrow Wilson International Center for Scholars. Co-sponsored by the Environmental Change and Security Project of the Wilson Center, the University of Michigan Population-Environment Fellows Program (PEFP), and the U.S. Agency for International Development (USAID), the meeting had the following primary objectives:

- To develop ideas for a possible USAID framework and criteria for decision-making concerning linked population-health-environment interventions.
- To discuss ways to form and sustain a network of population-health-environment advocates and practitioners to share ideas and experiences on an on-going basis.

In his opening remarks, Duff Gillespie, Deputy Assistant Administrator of USAID's Center for Population, Health and Nutrition (PHN) noted the special efforts to include health aspects in the meeting. Although USAID has convened previous events on population-environment interventions, this meeting marked the first time health was included in the equation with active participation from representatives of international health organizations. Gillespie also mentioned the budget constraints at USAID which unfortunately have prevented the increase of support for population-environment activities.

Frank Zinn, Director of the Population Fellows Program, gave additional welcoming remarks, noting the involvement of USAID's reconstituted "Working Group on Population and Environment," now the "Population, Health and Environment Working Group" that developed ideas and drafted the agenda for the meeting. He also underscored the basic purpose of the event—to review progress made to date in understanding if, how and why linked interventions make sense, and to give USAID some thoughts on how it can build population-health-environment linkages into its strategic framework.

The final set of introductory presentations focused on USAID and its current strategic frameworks for environment and population. Irene Koek from USAID's Office of Health presented several charts depicting the Agency's overall framework as it relates to the national interests of the United States as well as a breakdown of USAID's population and health objectives. USAID's goals for population, health and environment are related to the Agency's overall mission. Agency strategic objectives and more specific PHN Center objectives are outlined in

Ben Stoner of USAID's Center for Environment noted that the chart in Figure 4, taken from Paul Harrison's *The Third Revolution*, was discussed at a meeting held in 1992 and sponsored by USAID's Africa Bureau. The 1992 meeting focused on the complex interactions between population and environment issues and the role of community-based integrated development programs. Stoner urged participants to review past meetings and to make sure that previous work done in this field, dating back to the 1960's and 1970's, not be forgotten. He also raised the importance of involving USAID Missions in the debate as Missions often have more flexibility to do integrated work compared to the central offices. Finally, he presented USAID's strategic objectives for the environment and pointed out that the Agency's current strategic framework is largely the result of Administrator Brian Atwood's leadership.

Sam Meyers, of USAID' Office of Health, concluded the presentation by outlining the Agency's goals and objectives for the meeting. He stated that USAID's primary goal was to develop a different model for achieving existing strategic objectives as

opposed to developing a completely new framework. Given the Agency's organizational structure, funding flows along sectors which makes it difficult to achieve inter-sectoral objectives. Meyers urged participants to consider the following hypothesis throughout the day: if programs really wish to achieve sustainability, it is important to provide services in response to the community's self-defined priorities. Population-health-environment linkages are most apparent to the local people. Therefore, it is important for development practitioners to pay attention to local needs.

Meyers stressed the need to focus on relationships between people and the environment as opposed to the perceived conflict between people and the environment. By exploring different models for development programs, it is possible to test the hypothesis stated above. He concluded his presentation by outlining the two major areas of focus within USAID: field-based activities and policy/advocacy.

Participants raised several points in response to the USAID presentations. Jeff Jordan of USAID's Policy Project began by expressing his frustration about the vertical structure of the Agency. Given the nature of funding flows, it is challenging even to coordinate population and health project funding within the same Center. Jordan noted that USAID has actually been considering population-environment linkages since 1990 and urged participants to encourage the central administration of the Agency to make linked interventions a priority.

3 May 1999

Pivotal States: A New Framework for U.S. Policy in the Developing World

Paul Kennedy, Dilworth Professor of History, Yale University
Daniel C. Esty, Associate Professor, Environmental Law and Policy, Yale University
Emily Hill, Research Associate, Yale University

Current international diplomatic efforts at addressing climate change have fundamental flaws and the United States should consider an alternative strategy that incorporates a pivotal states approach, according to Daniel Esty of Yale University, a contributing author to *The Pivotal States: A Framework for U.S. Policy in the Developing World*. Esty and co-editors Paul Kennedy and Emily Hill of Yale University spoke about their pivotal states strategy at a May 3, 1999 meeting of the Environmental Change and Security Project.


Paul Kennedy

In winter 1999, a book-length expansion of the original Pivotal States article, which originally appeared in *Foreign Affairs* in 1996, was published. Co-editors Robert Chase, Emily Hill and Paul Kennedy maintain that the United States has no clear framework for addressing the majority of the world—the many nations that are not members of the G-8, special cases such as Israel and China, or rogue states. The Pivotal States framework assumes that among the remaining 140 countries of the world, there is a group of nine countries whose behavior and future is "pivotal" for U.S. interests. Kennedy, in his brief overview of the "pivotal states" approach, argued that these nine countries (Brazil, Mexico, Egypt, Algeria, Indonesia, Pakistan, India, South Africa, and Turkey) should be the focus of U.S. policy attention and resources. Three years after the initial pivotal states article was published in *Foreign Affairs* he asked for the audience to make an appraisal of whether the pivotal states approach had made a difference, if it had sharpened the focus of policymaking, and whether or not it was right?

Emily Hill contrasted the situation in 1996 with today's international environment. In 1996, there was a declining interest in foreign affairs and U.S. policy was reactive and rudderless, desperately in need of a framework. Today, three years later, interest in foreign affairs has increased, partly due to the Asian financial crisis and the conflict in Kosovo. She asserted that because of the level of globalization, the United States is coming to depend more on stability and economic growth in the developing world than it has in the past. She maintained that trade, rather than aid, should be the focus of our foreign policy in the pivotal states, particularly since development assistance levels have remained stagnant.

Daniel Esty, author of a cross-cutting chapter on the environment, raised the possibility that a purely environmental criteria may identify a different set of pivotal states. Esty asserted that governments need to address global or transnational issues within a new framework. Because environmental stress can destabilize countries and have effects that spill over into the United States, mainstream foreign policy needs to focus greater attention on environmental stresses. He also asserted that using an environmental lens, those states which should be included in the "pivotal" list are different than Kennedy and Hill's original nine. He stressed that China and Russia are the countries of greatest environmental concern.

Esty also argued that the Kyoto framework is a fundamentally flawed strategy and that we should try alternative approaches. He suggested shifting the focus of negotiations to a core set of twenty states. This strategy would explicitly bring developing countries into negotiations in a way that the Kyoto process has failed to do, thereby addressing congressional concern that developing countries are not doing their part on climate change.

The discussion featured a debate on the continuing to use a state-centered approach to international affairs. The authors argued that such an approach, rather than one focused on non-state actors, was necessary and presented a compromise between traditional realists and those who want to marginalize the role of the state.

Another participant asked whether foreign aid allocation decisions should be based on a pivotal state framework. The speakers responded that their assertion that aid should focus on pivotal states had encountered a great deal of criticism. Some participants contended that the pivotal states tended to be too large and too advanced to be real targets of foreign development assistance. Participants also argued that there was a need to examine aid in the context of a global division of labor and resources. The speakers asserted that U.S. policy makers would benefit from taking a regional, rather than a thematic approach to foreign policy formation.

14 May 1999

Saving the Seas: Developing Capacity and Fostering Environmental Cooperation in Europe

On May 14, the Environmental Change and Security Project, the East European Studies Program, and the West European Studies Program of the Wilson Center co-sponsored a one-day meeting on multiple and diverse sources of pollution that European seas and waterways face today. Local, national, and international efforts to address these problems are equally varied. Two paper presentations addressed environmental capacity building efforts around the Baltic on local, national, and international levels. Conclusions stressed lessons for multilateral banks and U.S. assistance programs. Two other paper presentations focused on the more dismal environmental outlook around the Black Sea. One paper highlighted the overwhelming challenges faced by nongovernmental organizations in the area while the other traced the decline of Western assistance programs to the region. Alan Simcock, Director, Marine, Land, and Liability Division, UK Department of the Environment, Transport and the Regions, gave the keynote address. His presentation focused on simplifying the dizzying "jigsaw puzzle" of international environmental treaties that apply to Europe water issues. He used the Brent Spar oil rig controversy to illustrate the tension between pragmatic and absolutist environmental protection policy approaches. Below, please find a list of topics and speakers. A volume of the conference proceedings will be published in 1999.

Left to right: Stacy D. VanDeveer and Tamar Gutnar

A Comparison of Capacity Building Efforts in the Baltic and Mediterranean Sea Regions

Stacy D. VanDeveer, Post Doctoral Fellow, John F. Kennedy School of Government, Harvard University

Banking on the Environment: Multilateral Banks and Capacity Building in the Baltic Sea Region

Tamar Gutner, Visiting Assistant Professor, Elliot School of International Affairs, George Washington University

Discussant

Miranda Schreurs, Assistant Professor, Department of Government and Politics, University of Maryland

International Cooperation and the Environmental Problems of European Seas

Alan Simcock, Director, Marine, Land and Liability Division, United Kingdom Department of the Environment, Transport and the Regions

Black Sea Environmental Cooperation: Beginnings and Problems

Martin Sampson, Professor, Department of Political Science, University of Minnesota

Non-State Actors and Black Sea Environmental Issues

Omer Faruk Genckaya, Professor, Department of Political Science and Public Administration, Bilkent University (Turkey)

Discussant

William Green Miller, Public Policy Scholar, Woodrow Wilson Center

Update

Nongovernmental & Governmental Activities

This section of Update *is designed to highlight the environment, population, and security activities of foundations, nongovernmental organizations, academic programs, and government offices. Please refer to the web sites listed within these descriptions for updates on current activities and contact information. If your organization is not listed or if you have an organization to recommend, please contact ECSP at ecspwwic@wwic.si.edu. The editors wish to thank all organizations that responded to requests for information.*

Academic Programs

CAROLINA POPULATION CENTER

The Carolina Population Center was established at the University of North Carolina at Chapel Hill (UNC-CH) in 1966 to coordinate university-wide programs in population. Forty-eight scholars are currently holding faculty appointments in fifteen UNC-CH departments. The Carolina Population Center is a multidisciplinary community which carries out population research and trains students. The Center's research projects are The Cebu Longitudinal Health and Nutrition Survey, China Health and Nutrition Survey, The EVALUATION Project, Lead and Pregnancy Study, The MEASURE *Evaluation* Project, Nang Rong Projects, The National Longitudinal Study of Adolescent Health, and Russia Longitudinal Monitoring Survey. For information, contact: Carolina Population Center, 123 W. Franklin St., University Square, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27516-3997. Tel: 919-966-2157; Fax: 919-966-6638; E-Mail: cpcnews@unc.edu; Internet: http://www.cpc.unc.edu/.

CENTER FOR ECOLOGICAL MANAGEMENT OF MILITARY LANDS

The Center for Ecological Management of Military Lands (CEMML) is a research and service unit within the Department of Forest Sciences in the College of Natural Resources at Colorado State University. The Center provides professional services and technical support to the Department of Defense (DoD) in conservation, environmental planning, and natural and cultural resources management. CEMML has several program areas including Resource Inventory and Monitoring, Floristics, Data Management and Analysis, Computer Cartography and Spatial Analysis, and Environmental Planning. They also provide a wide range of professional training in support of the DoD conservation and land management missions. In 1996, the Center published *U.S. Army Lands: A National Survey*. For information, contact: Center for Ecological Management of Military Lands, Colorado State University, Fort Collins, CO 80523-1470. Tel: 970-491-2748; Fax: 970-491-2713; E-Mail: cemml@cemml.colostate.edu; Internet: http://www.cemml.colostate.edu.

CENTER FOR ENVIRONMENTAL SYSTEMS RESEARCH

The goals of the Center for Environmental Systems Research are: 1) to increase understanding about the functioning of environmental systems and the causes of environmental problems, and 2) to identify "sustainable" pathways into the future, i.e. pathways that allow development of society in harmony with nature. The uniqueness of the Center, created in 1995, lies in its systems approach—the use of methods and instruments of systems thinking, such as systems analysis and computer simulation; and in its interdisciplinary approach, in this case meant to be the coupling of social sciences with natural sciences. To accomplish the Center's goals, research activity is carried out in three research groups and one working group: the Research Group on Ecosystems Modeling; the Research Group on Society-Environment Interactions; the Research Group on Global and Regional

Dynamics; and the Eco-balance Group. The Center strongly emphasizes collaboration with other institutions both inside and outside Germany. As a young Center, many new projects and themes are under development, which will give greater emphasis to the social and economic aspects of environmental systems, and to topics of global environmental change. Cross-cutting themes under development include the World Water Program, Society-Environment Interactions, and Global Environmental Security. The Center will also intensify its link between science and policy by using its research findings to help develop national and international environmental policy. For information, contact: Dr. J. Alcamo, Director, or Dr. K.-H. Simon, Deputy Director, The Center for Environmental Systems Research, University of Kassel, Kurt-Wolters-Strasse 3, 34109 Kassel, Germany. E-Mail: alcamo@usf.uni-kassel.de or simon@usf.uni-kassel.de.

Committee for the National Institute for the Environment

The Committee for the National Institute for the Environment (CNIE) has a mission to improve the scientific basis for making decisions on environmental issues through the successful operation of a National Institute for the Environment (NIE). The work of the CNIE is funded by private and corporate foundations, universities, members of the CNIE Associates Program, and individuals. The effort to create the NIE began in 1989 with a meeting of 50 scientists, environmentalists, and policy experts, led by Dr. Stephen Hubbell of Princeton University and Dr. Henry Howe of the University of Illinois, Chicago. CNIE is demonstrating the information dissemination function of the NIE by providing free, educational, nonadvocacy resources through a prototype National Library for the Environment, accessible online at no charge. The Library includes information services (daily news, congressional reports and briefing books, laws and treaties, educational resources, jobs & careers, meetings, journals, virtual topic libraries, reference materials, etc.) and addresses topics such as agriculture and grazing, air, biodiversity and ecology, energy, forestry, global climate change, mining, ocean and coastal resources, population, public lands, stratospheric ozone, waste management, water quality, wetlands, and others. CNIE is also exploring the development of online Country Briefing Books. For information, contact: Committee for the National Institute for the Environment, 1725 K St. NW, Ste. 212, Washington, DC 20006-1401. Tel: 202-530-5810; Fax: 202-628-4311; E-Mail: cnie@cnie.org; Internet: http://www.cnie.org/.

Cornell Program on Environment and Community

The Cornell Program on Environment and Community (CPEC), housed in the Cornell's Center for the Environment, seeks to foster more effective management of environmental, community, and public policy conflicts. To meet this goal, the program aims to build community, institutional, and individual capacities for collaborative decision-making over a broad range of issues. The approach includes: 1) integrating research and practice in selected field-based collaborative decision-making initiatives, 2) developing networks and working partnerships among stakeholder groups, and 3) creating multiple learning opportunities through seminars, field studies, program cross-visits, applied research, peer exchange, and capacity-building workshops. In the United States, programs have focused on developing a number of regionally- and nationally-based research and networking projects on public issues education, coalition-building, public involvement in National Forest planning, and community-based ecosystems management. In Central America, the program has continued to help build the capacity of local and regional practitioner networks through training workshops, cross-visits, and case study research and documentation. Work in Southeast Asia has emphasized the development of networks of environmental mediation practitioners, with primary focus in Indonesia. Additional program activities include emerging work in the Philippines and southern China. For information, contact: CPEC, 112 Rice Hall, Cornell University, Ithaca, NY 14843. Tel: 607-255-4523; Fax: 607-255-8207; E-Mail: busters@cornell.edu; Internet: http://www.cfe.cornell.edu/CPEC.

Environmental Policy and Society (EPOS)

Environmental Policy and Society (EPOS) is a research network which began its activities in 1991. The focus lies on environmental security in community perspectives and on societal impacts of environmental policy change. The ambition is to begin with a community perspective as a means to seek the more general principles forming a political dimension of environmental change. This approach means, by definition, an interdisciplinary mode of operation; problems addressed are essentially social, but aspects other than those of social science are also present. Accordingly, the importance of EPOS studies lies not in the ecological or environmental competence but in the social scientific contextualization of central, current environmental questions. This overall approach is emphasized in several studies and the aim is to combine the findings of the different projects included in the network. The network involves partners both in Sweden and in eastern Africa and is operated with a small secretariat at Linkoping University in Sweden. Anders Hjort af Ornäs is the program director. For information, contact: EPOS, Tema Institute, Linkoping University, 581 83 Linkoping, Sweden. Tel: 46-13-28-25-10; Fax: 46-13-28-44-15; E-Mail: tiigr@tema.liu.se; Internet: http://www.tema.liu.se/epos.

The Global Environmental Change and Human Security Project (GECHS)

In May 1996, the Scientific Committee of the International Human Dimensions of Global Change Programme (IHDP) formally adopted the Global Environmental Change and Human Security (GECHS) initiative developed by the Canadian Global Change Programme and the Netherlands Human Dimensions Programme as a core project of the IHDP. At present, there are three other

major projects in the IHDP: Land Use and Cover Change (LUCC), which is a joint initiative with the International Geosphere-Biosphere Program (IGBP); Institutional Dimensions of Global Environmental Change (IDGC); and Industrial Transformation (IT). GECHS is coordinated by the Canadian Global Change Programme and the Netherlands HDP Committee, in conjunction with the IHDP. The scientific planning committee is under the directorship of Steve Lonergan (Canada), Mike Brklacich (Canada), Nils Petter Gleditsch (Norway), Sunita Narain (India), Marvin Soroos (USA), Chris Cocklin (Australia), Edgar Guttierez-Espeleta (Costa Rica), Ans Kolk (Netherlands), and Richard Matthew (USA). The objectives of the project are three-fold: (1) to promote research activities in the area of global environmental change and human security ("human security" recognizes the essential integrative nature of the relationship among individual, community and national vulnerability to environmental change); (2) to encourage the collaboration of scholars internationally; and (3) to facilitate improved communication and cooperation between the policy community/user groups and the research community. For information, contact: Steve Lonergan, GECHS International Project Office, University of Victoria, P.O. Box 1700, Victoria, B.C., Canada V8W 2Y2. Tel: 250-472-4337; Fax: 250-472-4830; E-Mail: info@gechs.org; Internet: http://www.gechs.org/index.htm.

Hampshire College, Population and Development Program

The Population and Development Program at Hampshire College combines teaching, research, activism and advocacy in the fields of international women's health, reproductive rights, and population and environment. It monitors changing trends in population policies and critiques conventional neo-Malthusian analyses of population and the environment from a pro-choice, feminist perspective. Current projects include research on the development of environmental conflict models. The Program also serves as the institutional base for the Committee on Women, Population and the Environment (CWPE), a multiracial network of feminist scholars and activists. CWPE has played an active role in challenging anti-immigrant initiatives in the U.S. environmental movement and has recently published an anthology, *Dangerous Intersections: Feminist Perspectives on Population, Environment and Development* with South End Press in Boston. For information, contact: Population and Development Program/SS, Hampshire College, Amherst, MA 01002. Tel: 413-559-5506; Fax: 413-559-5620; E-Mail: cwpe@hampshire.edu.

Harvard Center for Population and Development Studies

The Harvard Center for Population and Development Studies is a university-wide research center, founded in 1964 as part of the Harvard School of Public Health. The Center's primary aim is to advance understanding of world population and development issues—especially those related to health, natural resources and the environment, human security, and socioeconomic development. The Center's work is characterized by a multidisciplinary approach, a commitment to integrate gender and ethical perspectives in its research, and a strong policy orientation. The Center attempts to advance knowledge through collaborative research, publications, seminars and a working paper series. In addition to advancing knowledge, the Center seeks to foster capacity-building and promote international collaboration to improve health and well-being around the world. About 35 full-time residents—including faculty, research fellows and graduate students—pursue work mainly through multidisciplinary working groups. Other participants are drawn from Harvard faculties and Boston-area universities. The Center also regularly invites visiting scholars from around the world. The Center's current research programs focus on gender and population policies, demographic transitions, burden of disease, health equity, human development and human security. The human security program explores concepts of security through research on ethics and international policy, human survival crises during complex humanitarian emergencies, environmental security and new diseases, and population and security. For information, contact: Winifred M. Fitzgerald, Executive Director, Harvard Center for Population and Development Studies, 9 Bow Street, Cambridge, MA 02138. Tel: 617-495-3002; Fax: 617-495-5418; E-Mail: wmfitz@hsph.harvard.edu; Internet: http://www.hsph.harvard.edu/hcpds.

The Institute for Foreign Policy Analysis, Inc.

The Institute for Foreign Policy Analysis (IFPA) is a non-profit policy research organization affiliated with the Fletcher School of Law and Diplomacy at Tufts University. Founded in 1976, the Institute has performed a wide range of studies on a variety of foreign policy and security affairs issues, as well as the sources, scope and impact of ethnic conflict in the post-Soviet security environment. The Institute also has a long-standing interest in issues of resource scarcity; the security implications of energy extraction, transit and processing; and the linkages between economic development, environmental degradation and political stability. IFPA is well-known internationally for its ability to organize a wide range of fora that bring together key decision-makers and experts from the international community. These meetings have included senior-level, formal gatherings involving the participation of heads of state and government, leaders of key multinational organizations and senior parliamentarians; expert-level workshops and round tables; and seminar series on Capitol Hill and elsewhere. With offices in Washington, DC and Cambridge, Massachusetts, IFPA has extensive resources upon which to draw in both the worlds of policy and academe. For information, contact: Robert L. Pfaltzgraff, Jr., President, Institute for Foreign Policy Analysis, Inc., 675 Massachusetts Ave., Cambridge, MA 02139. Tel: 617-492-2116; Fax: 617-492-8242; E-Mail: mail@ifpa.org; Internet: http://www.ifpa.org/text_pages/home_.htm.

MIT Project on Environmental Politics and Policy

The Project on Environmental Politics & Policy sees policymaking first and foremost as a political process—the collision of political, economic, social, and philosophical interests—and only secondarily as an exercise in technical problem solving. Addressing environmental problems as though they were fundamentally engineering problem sets most often produces solutions that are politically infeasible, regardless of the technical merits. Accordingly, the Project's goal is to advance an understanding of environmental policymaking as a political process and thereby improve the chances of designing responsive and effective technical policies that can be more readily adopted and implemented. The Project has a broad research agenda. A major line of research examines the ongoing struggle between environmental and economic interests to influence national, state, and local policies. A second line of research investigates the continuing failure of federal agencies to bring ecologically sound management practices to public lands and natural resources held in common. A third line of research explores how local governments and the public absorb and respond to the complex scientific-technical content of local environmental problems and, in turn, how their responses affect technical options for environmental policy. For more information, contact: MIT Project on Environmental Politics and Policy, Massachusetts Institute of Technology, Bldg. E53-402, Cambridge, MA 02139. Tel: 617-253-8078; Fax: 617-258-6164; E-Mail: smmeyer@mit.edu; Internet: http://web.mit.edu/polisci.mpepp.

Monitoring Newly Independent States Environmental Developments Project (MNISED)

Currently the primary project activity involves collecting information on environmental and health problems associated with nuclear weapons, missiles, and the civilian nuclear industry in the former Soviet Union. This open media collection supports faculty and student research and academic needs at the Monterey Institute. The project is a part of the Center for Russian and Eurasian Studies Library, which facilitates information collection and dissemination for a variety of Institute programs and projects, including the Newly Independent States Nonproliferation Project (NISNP). As an integral unit of the Center for Nonproliferation Studies at the Monterey Institute, NISNP incorporates this information into its Nuclear Profiles Database. The database contains the most comprehensive open-source collection of information on nuclear proliferation in the former Soviet Union. Related environmental topics in the database include radioactive waste storage, submarine dismantlement, and spent fuel reprocessing. In 1995, MNISED discontinued publication of its semiannual journal *NIS Environmental Watch*. Back issues 1-7 are available upon request. For information, contact: Elena K. Sokova, Center for Russian and Eurasian Studies, Monterey Institute of International Studies, 425 Van Buren St., Monterey, CA 93940. Tel: 831-647-3582; Fax: 831-647-6672; E-Mail: esokova@miis.edu; Internet: http://cns.miis.edu/cres.htm.

Population Information Program

The Population Information Program (PIP) supplies health and family planning professionals and policymakers with authoritative, accurate, and up-to-date information in its journal *Population Reports*, the bibliographic database POPLINE, and the Media/Materials Clearinghouse (M/MC). PIP is supported by the United States Agency for International Development (USAID). On of the Program's recent publications is "Solutions for a Water-Short World," part of the *Population Reports* series. For information, contact: Population Information Program, 111 Market Place, Suite 310, Baltimore, MD 21202. Tel: 410-659-6300; Fax: 410-659-6266; E-Mail: popline@jhuccp.org; Internet: http://www.jhuccp.org.

Princeton University, Globalization and Fragmentation Project

There are two broad trends that challenge the contemporary nation-state order: accelerating globalization in financial, currency, and product markets, accompanied by a trend toward the homogenization of consumer cultures and political values on the one hand; and on the other, fragmentation of existing states into ethnic or sectarian sub-units. Directly affecting both trends are the complex processes of international, national, and regional environmental degradation with repercussions that range from the search for international regimes to local revolts among directly-affected populations. While old issues of states and their security will certainly not vanish, basic redefinitions of what constitutes "vital interests" of given states, and thus of their security, are underway. This project sponsored one interdisciplinary graduate seminar each year from 1995 to 1998 at Princeton University. A second phase (1998-2001) of the same project focuses on three reactions to globalization: collective efforts to restore peace following civil wars; federal systems as responses to territorially based conflicts; and nation-state specialization in a global division of labor. For more information, contact: Center of International Studies, Bendheim Hall, Princeton University, Princeton, NJ 08544. Tel: 609-258-4851; Fax: 609-258-3988; Internet: http://www.wws.princeton.edu/~cis/.

The George Washington University, Space Policy Institute

The Space Policy Institute was established in 1987 as an element of the Center for International Science and Technology Policy of George Washington University's Elliott School of International Affairs. The Institute focuses its activities on examining policy issues related to the space efforts of the United States and cooperative and competitive interactions in space between the United States and other countries. Using a combination of staff analysis, commissioned papers, groups of experts, research interviews, seminars focused on space and security issues, and a major conference to review the project's recommendations, this project focuses on the following primary issues: 1) understanding the key trends in dual-purpose space technologies; 2) regional security

implications of the proliferation of space technology; 3) implications for U.S. military force planning and operations; and 4) recommendations for effective policy responses. For further information, contact: Ray A. Williamson or John C. Baker, Space Policy Institute, 2013 G St. NW, Stuart 201, The George Washington University, Washington, DC 20052. Tel: 202-994-7292; Fax: 202-994-1639; E-Mail: rayw@gwu.edu or jcbaker6@gwu.edu.

STANFORD UNIVERSITY CENTER FOR ENVIRONMENTAL SCIENCE AND POLICY, INSTITUTE FOR INTERNATIONAL STUDIES

The Institute for International Studies (IIS) at Stanford University has established an integrated teaching and research program in environmental studies to aid in the discovery and dissemination of knowledge related to global issues such as population growth, human health and nutrition, climate change, toxic wastes, and loss of biodiversity. IIS has established five main research areas that combine both science and policy-related studies: (1) global change; (2) ecology, agriculture, biodiversity and regulation; (3) health, population, and resources; (4) technological approaches to biodiversity assessment; and (5) market-based approaches to environmental preservation. These issues are currently the focus of the Environmental Policy Seminar, a weekly series that is conducted by IIS for faculty members and their graduate students throughout the University. The seminars are project-focused, and are tied to ongoing research by faculty and graduate students throughout the University as well as other academic, governmental, or industrial institutions sharing an interest in solving or implementing solutions to the problems presented. For information, contact: Donald Kennedy or Walter A. Falcon, Co-Directors, Center for Environmental Science and Policy, Encina Hall, Room 200, Stanford, CA 94305-6055. Tel: 415-725-9888; Fax: 415-725-2592; E-Mail: hfexn@forsythe.stanford.edu.

UNIVERSITY OF MARYLAND, HARRISON PROGRAM ON THE FUTURE GLOBAL AGENDA

Global environmental change, demographic trends, and the diffusion of technological innovations are rapidly reshaping the international system. Disregarding national borders, these forces are transforming international relations, deepening interdependence, and forging a global system from a world of sovereign states. Creating a more sustainable planet for the next century will require dealing with a wide range of policy issues raised by this rapid acceleration of events. The Harrison Program on the Future Global Agenda engages in futures-oriented teaching and research that will contribute to humanity's ability to anticipate and deal effectively with these important currents of change. The Program makes an effort to understand the nature and interaction of environmental, technological, social, and political systems, and to suggest potential means of breaking out of destructive patterns of behavior. To this end, faculty develop new and innovative educational materials, conduct scholarly research, and organize conferences and workshops that bring together scientists, social theorists, advocates, and policymakers to examine key components of the future global agenda. For more information, contact: Harrison Program on the Future Global Agenda, Department of Government and Politics, Tydings Hall, Suite 3114, University of Maryland College Park, College Park, MD 20742. Tel: 301-405-7490; Fax: 301-314-9690; E-Mail: harrison@bss2.umd.edu; Internet: http://www.bsos.umd.edu/harrison/.

UNIVERSITY OF MICHIGAN, POPULATION FELLOWS PROGRAM

The University of Michigan Population Fellows Program was first established in 1984 and is funded through the United States Agency for International Development (USAID). The Program places Fellows with a wide variety of organizations that address family planning and reproductive health issues in developing countries. The Program provides a modest professional stipend to the Fellows and aims to both enhance the Fellows' skills, as well as to build capacity within host organizations for development of effective and sustainable family planning and reproductive health interventions. Since the Program's inception, there have been more than 200 professionals placed in the field and an expansion of the Program's original focus to include several new initiatives, including the Population-Environment Fellows Program (PEFP), the Population, Environmental Change and Security (PECS) Initiative, and the Minority-Serving Institutions Initiative (MSI). The Woodrow Wilson Center's Environmental Change and Security Project is a key element of the PECS Initiative. Fellows work in a wide variety of settings and perform a wide range of roles for their host organizations. All Fellows, however, gain the opportunity to develop a network of professional contacts and the chance to master new skills in the field of international development assistance. They also gain the opportunity to support meaningful projects around the world. Fellows generally come into the Program with a Master's degree in a related field and less than five years of professional experience. They leave the Fellows Program in a position to pursue mid-level career placements in the field of international population/family planning assistance or population-environment. For information, contact: Mita Sengupta Gibson, Manager, Population-Environment Fellows Program, Center for Population Planning, University of Michigan, Room M4531, School of Public Health II, 1420 Washington Heights, Ann Arbor, MI 48109-2029. Tel: 734-936-1627; Fax: 734-647-4947; E-Mail: pop.fellows@umich.edu or popenv@sph.umich.edu; Internet: http://www.sph.umich.edu/pfps/.

UNIVERSITY OF TORONTO, PROJECT ON ENVIRONMENTAL SCARCITIES, STATE CAPACITY, AND CIVIL VIOLENCE

The Project on Environmental Scarcities, State Capacity, and Civil Violence at the University of Toronto has investigated the impacts of water, forests and cropland resource scarcities on governmental capabilities in the developing countries of China, India and Indonesia. The project asks, if capacity declines, is there an increased likelihood of widespread civil violence such as riots, ethnic clashes, insurgency and revolution? The project has targeted its findings for the public and policymakers in Canada,

the United States, China, India and Indonesia. Funding has been provided by The Rockefeller Foundation and The Pew Charitable Trusts. Recent publications to emerge from the project include *Ecoviolence: Links Among Environment, Population, and Security*, edited by Thomas F. Homer-Dixon and Jessica Blitt, and a new 2nd edition of *Environment, Scarcity, and Violence*, by Homer-Dixon (see the Bibliography section for more information on these works). For information on the project, contact: Thomas Homer-Dixon, Principal Investigator, Peace and Conflict Studies Program, University College, 15 King's College Circle, University of Toronto, Toronto, Canada M5S 1A1. Tel: 416-978-8148; Fax: 416-978-8416; E-Mail: pcs.programme@utoronto.ca; Internet: http:/www.library.utoronto.ca/www/pcs/state.htm.

Yale Center for Environmental Law and Policy

The Yale Center for Environmental Law and Policy was established in 1994 by the Yale Law School and the Yale School of Forestry and Environmental Studies (YSFES). The Center draws on resources throughout Yale University to develop and advance environmental policy locally, regionally, nationally, and globally. For information, contact: Yale Center for Environmental Law and Policy, Sage Hall, 205 Prospect Street, New Haven, CT 06511. Tel: 203-432-6065; Fax: 203-432-5596; E-mail: epcenter@minerva.cis.yale.edu; Internet: http://pantheon.yale.edu/~epcenter.

Foundations

The Heinrich Böll Foundation

With headquarters in Berlin, Germany, the Heinrich Böll Foundation is a political foundation for the promotion of democratic ideas, civil society and international understanding. It is associated with the party Alliance 90/The Greens, and its work is oriented towards ecology, democracy, solidarity and non-violence. At present, one of the key themes of the Foundation's international work is "Ecology and Sustainable Development." The foundation's projects, in cooperation with partner organizations, include exchanges, educational programs, and study tours. The Foundation maintains offices in eleven countries outside of Germany. For more information, contact: Sascha Muller-Kraenner, Heinrich Böll Foundation, Washington Office, Chelsea Gardens, 1638 R St. NW, Ste. 120, Washington, DC 20009. Tel: 202-462-7512; Fax: 202-462-5230; E-Mail: washington@boell.de, Internet: http://www.ased.org/index.htm.

Canadian Foundation for the Americas

Founded in 1990, the Canadian Foundation for the Americas (FOCAL) aims to develop greater understanding of important hemispheric issues and help to build a stronger community of the Americas. As a policy center, FOCAL fosters informed and timely debate and dialogue among decision-makers and opinion leaders in Canada and throughout the Western Hemisphere. FOCAL studies a range of issues in four policy areas: Inter-American Relations, Governance and Human Security, Social Policies, and Economic Integration. In 1999, FOCAL may deal with topics such as drug trafficking and human security in the Americas, the negotiations of the Free Trade Areas of the Americas, improved health strategies, and Canada's relations with the countries in the Americas. Topics examined by FOCAL on an ongoing basis include the environment and sustainable development. FOCAL is an independent, not-for-profit charitable organization that is guided by a Board of Directors. It receives funding from the Department of Foreign Affairs and International Trade, the Canadian International Development Agency and other public and private sector organizations as well as inter-American institutions. For information, contact: Canadian Foundation for the Americas, 1 Nicholas St., Ste. 720, Ottawa, Ontario K1N 7B7. Tel: 613-562-0005; Fax: 613-562-2525; Internet: http://www.focal.ca.

Compton Foundation, Inc.

The Compton Foundation was founded to address community, national and international concerns in the fields of Peace and World Order, Population, and the Environment. Other concerns of the Foundation include Equal Educational Opportunity, Community Welfare and Social Justice, and Culture and the Arts. In a world in which most problems have become increasingly interrelated and universal in dimension, and where survival of human life under conditions worth living is in jeopardy, the Foundation is concerned first and foremost with the prevention of war and the amelioration of world conditions that tend to cause conflict. Primary among these conditions are the increasing pressures and destabilizing effects of excessive population growth, the alarming depletion of the earth's natural resources, the steady deterioration of the world's environment, and the tenuous status of human rights. To address these problems the Compton Foundation focuses most of its grant-making in the areas of Peace and World Order, Population, and the Environment, with special emphasis on projects that explore the interconnections between these three categories. The Foundation believes that prevention is a more effective strategy than remediation, that research and activism should inform each other, and that both perspectives are needed for productive public debate. For more information, contact: Compton Foundation, Inc., 545 Middlefield Road, Suite 178, Menlo Park, CA 94025. Tel: 650-328-0101; Fax: 650-328-0171; E-Mail: comptonfdn@igc.org.

Ford Foundation

The Ford Foundation is a resource for innovative people and institutions worldwide. Its goals are to: strengthen democratic values, reduce poverty and injustice, promote international cooperation, and advance human achievement. A fundamental challenge facing every society is to create political, economic, and social systems that promote peace, human welfare, and the sustainability of the environment on which life depends. The Foundation believes that the best way to meet this challenge is to encourage initiatives by those living and working closest to where problems are located; to promote collaboration among the nonprofit, government, and business sectors; and to assure participation by men and women from diverse communities and at all levels of society. It works mainly by making grants or loans that build knowledge and strengthen organizations and networks. Since its financial resources are modest in comparison to societal needs, it focuses on a limited number of problem areas and program strategies within its broad goals. Founded in 1936, the Foundation operated as a local philanthropy in the state of Michigan until 1950, when it expanded to become a national and international foundation. Since its inception it has been an independent, nonprofit, nongovernmental organization. It has provided over $8 billion in grants and loans. For information, contact: The Ford Foundation, 320 East 43rd St., New York, NY 10017. Tel: 212-573-5000; Fax: 212-351-3677; Internet: http://www.fordfound.org/website/website.html.

The John D. and Catherine T. MacArthur Foundation, Program on Global Security and Sustainability

The objective of the Program on Global Security and Sustainability of the MacArthur Foundation is to promote peace within and among countries, healthy ecosystems worldwide, and responsible reproductive choices. The Foundation encourages work that recognizes the interactions among peace, sustainable development, reproductive health, and the protection of human rights. It supports innovative research and training, the development of new institutions for cooperative action, and new strategies for engaging U.S. audiences in efforts to advance global security and sustainability. The Foundation recognizes the importance of three specific global issues: arms reduction and security policy; ecosystems conservation; and population. These are three core areas of the Program. In addition, support is provided in three key aspects of the global context: the state of understanding of the concepts of security and sustainability; the need for new partnerships and institutions to address global problems; and the education of the public about the United States' interests and responsibilities regarding global issues. For information, contact: The John D. and Catherine T. MacArthur Foundation, 140 South Dearborn St., Chicago, IL 60603. Tel: 312-726-5922; E-Mail: 4answers@macfdn.org; Internet: http://www.macfdn.org.

The David and Lucile Packard Foundation

The David and Lucile Packard Foundation is a private family foundation created in 1964 by David Packard (1912-1996), co-founder of the Hewlett-Packard Company, and Lucile Salter Packard (1914-1987). The Foundation provides grants to nonprofit organizations in the following broad program areas: Science, Children, Population, Conservation, Arts, Community and Special Areas that include Organizational Effectiveness and Philanthropy. The Foundation provides national and international grants, and also has a special focus on the Northern California counties of San Mateo, Santa Clara, Santa Cruz, and Monterey. The Foundation's assets were $9 billion at the end of 1997 and grant awards were more than $200 million. The Foundation is directed by an eight-member Board of Trustees which includes the four children of the founders. A staff of 115 employees conducts the day-to-day operations of the Foundation. For information, contact: The David and Lucile Packard Foundation, 300 Second Street, Suite 200, Los Altos, California 94022. Tel: 650-948-7658; Fax: 650-948-5793; Internet: http://www.packfound.org.

Ploughshares Fund

Founded at a time when global nuclear conflict seemed a real and immediate possibility, the Ploughshares Fund was designed to provide financial support to the best efforts we could identify among the many people and organizations working to eliminate the threat of nuclear war. Since that time Ploughshares has responded to new challenges—the burgeoning trade in conventional weapons, the explosion of regional conflict in the aftermath of the Cold War, and the growing danger of nuclear weapons proliferation following the breakup of the Soviet Union. With gifts from just over 5,000 individuals and a few foundations, Ploughshares has made over 1,400 grants totaling more than $18,000,000 since its inception in 1981. The Ploughshares Fund supports national and grassroots organizations that over the years have forced the closure of nuclear weapons production lines around the country, charging safety and environmental abuses at those facilities. With direct support and technical assistance, Ploughshares enables citizens to monitor and expose DOE's continued efforts to design, test, and produce nuclear weapons at the expense of environmental cleanup. A coalition of these groups is now suing the DOE to halt construction of new stockpile stewardship facilities, claiming that it has failed to comply with the National Environmental Policy Act. Ploughshares also supports the development of an indigenous network of citizens' groups in the former Soviet Union who are facing equal or greater environmental challenges caused by the production of nuclear weapons in their countries. For information, contact: Ploughshares Fund, Fort Mason Center, Bldg. B, Suite 330, San Francisco, CA 94123. Tel: 415-775-2244; Fax: 415-775-4529; E-Mail: ploughshares@igc.org; Internet: http://www.ploughshares.org/.

THE ROCKEFELLER BROTHERS FUND, "ONE WORLD: SUSTAINABLE RESOURCE USE" AND "GLOBAL SECURITY PROGRAM"
The goal of the Fund's sustainable resource use program is to "foster environmental stewardship which is ecologically based, economically sound, culturally appropriate and sensitive to questions of intergenerational equity." The Global Security Program comprises grantmaking in the pursuit of "a more just, sustainable, and peaceful world by improving the cooperative management of transnational threats and challenges," working with public and private actors in North America, East Asia, Central and Eastern Europe, and southern Africa. The program focuses on constituency building, transparency and inclusive participation, the challenges of economic integration, and emerging transnational concerns. For information, contact: The Rockefeller Brothers Fund, Inc., 1290 Avenue of the Americas, New York, NY 10104-0233. Tel: 212-373-4200; Fax: 212-315-0996; E-Mail: rbf@mcimail.com; Internet: http://www.rbf.org/.

ROCKEFELLER FOUNDATION, GLOBAL ENVIRONMENT DIVISION
The Global Environment Division's goals are to build international leadership capable of initiating and carrying out innovative approaches to sustainable development, and to facilitate the transition to a new energy paradigm based on sustainability, renewable resources, efficient use, economic viability and equity in access. The Global Environment division seeks to catalyze the transition to a new energy paradigm in both developed and developing countries by reducing dependence on fossil fuel, and replacing it with renewable-energy sources and increased energy efficiency. In the United States the Global Environment division supports the Energy Foundation's efforts to promote policies, practices and technologies that help utilities to generate, and end-users to employ, energy at the least financial and environmental cost. The Foundation conceived the Global Energy Initiative, which seeks to demonstrate to high-level, national decision-makers in developing countries the viability of renewable-energy sources by emphasizing their equity and quality-of-life benefits. This Initiative aims to facilitate dialogue among political, business and community leaders to catalyze selective projects designed to demonstrate an improved quality of life for the rural and urban poor, and simultaneously reduce the threats of pollution and global climate change. *High Stakes: The United States, Global Population and Our Common Future* is a book recently published by the Foundation. For information, contact: Rockefeller Foundation, Global Environment Division, 420 Fifth Ave., New York, NY 10018. Tel: 212-852-8365; Internet: http://www.rockfound.org.

SOROS OPEN SOCIETY INSTITUTE
The Open Society Institute (OSI) is a private operating and grantmaking foundation that seeks to promote the development and maintenance of open societies around the world by supporting a range of programs in the areas of educational, social, and legal reform, and by encouraging alternative approaches to complex and often controversial issues. Established in 1993 and based in New York City, the Open Society Institute is part of the Soros foundations network, an informal network of organizations created by George Soros that operate in over 30 countries around the world, principally in Central and Eastern Europe and the former Soviet Union but also in Guatemala, Haiti, Mongolia, Southern Africa, and the United States. Together with its Hungary-based affiliate, the Open Society Institute-Budapest, OSI assists these organizations by providing administrative, financial, and technical support, and by establishing "network programs" that address certain issues on a regional or network-wide basis. The programs of the Open Society Institute fall into three categories: network programs; international initiatives; and programs that focus on the United States. For more information contact: Office of Communications at the Open Society Institute-New York, 400 West 59th Street, New York, NY 10019. Tel: 212-548-0668; Internet: http://www.soros.org.

SUMMIT FOUNDATION
The Summit Foundation is dedicated to improving the quality of life for residents and guests of Summit County. Summit County, Colorado is a vacation paradise for millions of visitors each year. But to over 18,000 people it is also their home—a special community enriched by the work of the Summit Foundation. Established in 1984 as the Breckenridge Development Foundation by the Breckenridge Ski Area, The Summit Foundation added support from Copper Mountain, Keystone, and Arapahoe Basin Ski Resorts and assumed its current name in 1991. A public foundation which funds other Summit County nonprofit agencies providing programs and services in art & culture, health & human service, education, environment, and sports, The Summit Foundation allocates funds twice per year from submitted applications. In 1994, The Foundation achieved an important milestone, surpassing $1 million in grants; all monies raised remain in Summit County. The Summit Foundation was not started as an endowed foundation, and therefore raises revenue through unrestricted individual and business donations and several fundraising events. For information, contact: The Summit Foundation, Breckenridge, CO 80424. Tel: 970-453-5970; E-Mail: sumfound@colorado.net; Internet: http://www.summitfoundation.org/home.html.

W. ALTON JONES FOUNDATION, SUSTAINABLE WORLD AND SECURE WORLD PROGRAMS
The W. Alton Jones Foundation seeks to build a sustainable world by developing new ways for humanity to interact responsibly with the planet's ecological systems as well as a secure world by eliminating the possibility of nuclear war and providing alternative methods of resolving conflicts and promoting security. The Sustainable World Program supports efforts that will ensure that human activities do not undermine the quality of life of future generations and do not erode the Earth's capacity to support living organisms. The Foundation addresses this challenge with a tight focus on issues whose resolution will determine how habitable

the planet remains over the next century and beyond: maintaining biological diversity; ensuring that human economic activity is based on sound ecological principles; solving humanity's energy needs in environmentally sustainable ways; and avoiding patterns of contamination that erode the planet's capacity to support life. The Secure World Program seeks to build a secure world free from the nuclear threat. The Foundation addresses this challenge by: promoting common security and strategies related to how nations can structure their relationships without resorting to nuclear weapons; devising and promoting policy options to control and eventually eliminate existing nuclear arsenals and fissile materials; stemming proliferation of nuclear weapons and related materials; addressing threats to global sustainability by preventing the massive release of radioactive material; and assessing and publicizing the full costs of being a nuclear-weapon state. For information, contact: W. Alton Jones Foundation, 232 East High St., Charlottesville, VA 22902-5178. Tel: 804-295-2134; Fax: 804-295-1648; E-Mail: earth@wajones.org; Internet: http://www.wajones.org/wajones.

Nongovernmental Organizations

The Aspen Institute

The Aspen Institute is an international nonprofit educational institution dedicated to enhancing the quality of leadership and policymaking through informed dialogue. The Institute's International Peace and Security Program is composed of a series of high-level international conferences designed to suggest practical strategies to promote peace, greater economic equity, and security in the face of the principal threats and sources of tension characterizing the first decades after the end of the Cold War. Participants are influential leaders with diverse backgrounds and perspectives from all global regions. Topics have included the new dimensions of national security, the role of intervention in managing conflict, conflict prevention, international poverty, and promoting peace in the Balkans. Post-conference publications are useful for policymakers, public education, and academic material. The Institute's program on Energy, the Environment, and the Economy seeks to build consensus in the areas of energy and environmental policies by convening private and public sector leaders in a nonadversarial setting. Recent or current activities include a Series on the Environment in the 21st Century, an annual Energy Policy Forum, a Mexico-U.S. Border Environmental Dialogue, a series on integrating environmental and financial performance, a series on non-proliferation and environmental aspects of nuclear waste policies, and an annual Pacific Rim energy workshop. For information, contact: Nancy Bearg Dyke (International Peace and Security Program) or Anne Carpenter (Program on Energy, the Environment, and the Economy), The Aspen Institute, 1 DuPont Circle, Washington, DC 20036. Tel: 202-736-5800; Fax: 202-467-0790; E-Mail: acarpenter@aspeninst.org; Internet: http://www.aspeninst.org.

Carnegie Endowment for International Peace, International Migration Policy Program

The Program is a leading source of expert analysis and policy ideas on migrant and refugee issues. It focuses on bridging the worlds of research and policy, bringing an independent voice to migrant and refugee policy debates, and enhancing public understanding of these and related issues. Its activities extend to Russia and other post-Soviet states, as well as numerous other governments, leading independent institutions, the UN, and other international agencies. For information, contact: Demetrios Papademetriou and Kathleen Newland, International Migration Policy Program, Carnegie Endowment for International Peace, 1779 Massachusetts Ave. NW, Washington, DC 20036. Tel: 202-939-2276; Fax: 202-332-0945; Internet: http://ceip.org.

Carnegie Endowment for International Peace, Managing Global Issues Project

The Project identifies lessons drawn from attempts in the international community to manage a wide range of global issues (including environment, weapons proliferation, organized crime, terrorism, trade, the Internet, and other issues). It examines how innovative mechanisms and techniques used in one arena (such as the NGO-government partnership in drafting and negotiating a land mine accord) can offer positive or negative lessons for the management of other transnational issues (such as negotiating agreements on climate change or global crime). By bringing together experts from a variety of different disciplines and professions, the project aims to strengthen practice and enrich the growing theoretical literature on international organizations and global governance with the insights of actual experience. For more information, contact: P.J. Simmons, Director, Managing Global Issues Project, 1779 Massachusetts Ave. NW, Washington, DC 20036. Tel: 202-939-2259; Fax: 202-483-4462; E-mail: pjsimmons@ceip.org; Internet: http://www.ceip.org.

Center for Bioregional Conflict Resolution

The Center for Bioregional Conflict Resolution was established in 1995 to study the complex relationship among human communities, public regulatory institutions, and the natural environment while addressing a growing number of intense conflicts between human communities and scarce resources. The Center works with parties to address large-scale environmental conflicts that are regional and transboundary in nature to increase awareness, collaboration, and coordination. The four primary goals of the Center are to study and enhance the conservation, preservation, and restoration of key bioregional resources, to foster the development of cooperative processes to sustain human communities and complex ecosystems, to aid in the development of

bioregional public policies, and to act as an information clearinghouse. The Center is currently developing the following research programs: Improving the Understanding of the Relationship between Ecosystem Planning and Management, Human Communities, and Public Institutions; Strengthening the Theory and Practice of Environmental Conflict Resolution; Leadership Training to Improve the Quality of Environmental Decision Making; and Developing Effective Strategies for Integrating Cultural Preservation with Environmental Protection. The Center's co-directors recently published a book, *Bioregionalism* (Routledge Press, 1997) that examines the history and confluence between bioregional science and conflict resolution. For information, contact: Center for Bioregional Conflict Resolution, 340 Soquel Avenue, Suite 104, Santa Cruz, CA 95062. Tel: 408-457-1397; Fax: 408-457-8610; E-mail: concur@concurinc.com; Internet: http://www.concurinc.com/CONCUR07.html.

Center for Defense Information

The Center for Defense Information (CDI) is a non-profit, non-government organization which believes that strong social, economic, political and military components and a healthy environment contribute equally to the nation's security. CDI opposes excessive expenditures for weapons and policies that increase the danger of war. CDI also produces a weekly television show, *America's Defense Monitor*. One of CDI's recent accomplishments is a documentary, titled "Water, Land, People & Conflict," which addresses complex national security issues related to the environment such as population growth, water scarcity, pollution, and economic stability. For local broadcast times and access to extensive resources on military and security issues, contact CDI's Internet site: http://www.cdi.org. For more information, contact: Center for Defense Information, 1799 Massachusetts Ave. NW, Ste. 615, Washington, DC 20036. Tel: 202-332-0600; Fax: 202-462-4559; E-Mail: info@cdi.org.

The Center for Economic Conversion

Founded in 1975, the Center for Economic Conversion (CEC) is a non-profit organization dedicated to creating positive alternatives to dependence on excessive military spending. One of the CEC's top priorities is "green conversion," the transfer of military assets (money, talent, technology, facilities and equipment) to activities that enhance the natural environment and foster sustainable economic development. This work includes: studies of green conversion efforts already underway in industry, national laboratories and military bases; a pilot project in green military base conversion; the promotion of public policies that encourage green conversion; and various educational activities that build support for green conversion. For information, contact: Joan Holtzman, Center for Economic Conversion, 222 View St., Mountain View, CA 94041. Tel: 650-968-8798; Fax: 650-968-1126; E-mail: cec@igc.apc.org; Internet: http://www.conversion.org.

Center for International Studies

The Center for International Studies (CIS) is a private, independent, non-profit, Baku-based research and public organization, which was founded in May 1998. The CIS Center focuses on the most challenging issues of international and regional security, oil pipeline politics, energy, environment, conflict resolution, peace and new geopolitics of great powers within the Caucasus and in the former Soviet Union. The CIS Research Groups work independently on research projects and analyze contemporary geopolitical and international security issues as well as energy and environmental problems from an Azeri perspective in order to give the public a better profile of the ongoing complex processes and the general situation in the region. For information, contact: Dr. Kamaran Abdullayev, Associate Director, CIS, 85 Samed Vurgun Street, Unit 7, Suite 103, Baku, 370022, Azerbaijan. E-mail: ABDULLAK@usa.net.org.

Center for Public Environmental Oversight

The Center for Public Environmental Oversight (CPEO) is an organization that promotes and facilitates public participation in the oversight of environmental activities, including but not limited to the remediation of U.S. federal facilities, private "Superfund" sites, and Brownfields. It was formed in 1992 as CAREER/PRO (the California Economic Recovery and Environmental Restoration Project) by the San Francisco Urban Institute, in response to the large number of military base closures in the San Francisco Bay Area. CPEO has its roots in community activism, and it provides support for public advocacy, but it is not a political organization. Its work is based upon six principles: Empowerment, Justice, Education, Communications, Partnership, and Credibility. CPEO publishes two newsletters, "Citizens' Report on the Military and the Environment" and "Citizens' Report on Brownfields." For more information, contact: SFSU Center for Public Environmental Oversight, 425 Market St., 2nd Floor, San Francisco, CA 94105. Tel: 415-904-7751; Fax: 415-904-7765; E-mail: cpeo@cpeo.org; Internet: http://www.cpeo.org.

The Center for Security Policy

The Center for Security Policy exists as a non-profit, non-partisan organization to stimulate and inform the national and international debates about all aspects of security policy, including their strategic and environmental implications, particularly as they relate to the all-encompassing question of energy. The Center is committed to preserving the credibility of U.S. antiproliferation efforts, and the message to allies and potential adversaries that the U.S. is serious about ensuring the safe and benign global development of nuclear energy. The Center has extensively studied the Chemical Weapons Convention, the Cienfuegos nuclear power project in Cuba, and expressed concern over the Department of Energy's Environmental Management program for

cleaning up the nuclear legacy of the Cold War. In addition, the Center calls for increased attention to the strategic importance of the vast oil reserves of the Caspian Basin, and to the deterioration of the sensitive ecosystems and waterways of the region (for example Turkey's imperiled Bosphorus Straits). The Center makes a unique contribution to the debate about these and other aspects of security and environmental policies, through its rapid preparation and dissemination of analyses and policy recommendations via computerized fax, published articles and electronic media. For information, contact: The Center for Security Policy, 1250 24th St. NW, Ste. 350, Washington, DC 20037. Tel: 202-466-0515; Fax: 202-466-0518; Internet: http://www.security-policy.org.

The Centre for the Development of Human Resources

The Centre for the Development of Human Resources at The Centre of Investigation and National Security of Mexico is conducting prospective studies on several issues related to national security, such as environmental security, food security, organized crime, drug trafficking, water availability, energy, poverty, low intensity conflict and other social, economic and political threats to national stability. These studies are designed to provide data information for building early warning systems and monitoring risk indicators. The first stage will conclude by December 1999, and the second one a year later. For information, contact: Jose Luis Calderón, Director, Centre for the Development of Human Resources, or Ricardo Márquez, Head of the Strategic Studies Program, Camino Real de Contreras No. 35, Col. La Concepción, Delegación Magdalena Contreras, Mexico, D.F., D.P. 10840. Tel: 6-24-37-00, ext. 2676 (Jose Luis Calderón) or ext. 2078 (Ricardo Márquez).

Consortium for International Earth Science Information Network (CIESIN)

CIESIN was established in 1989 as a non-profit, non-governmental organization to provide information that would help scientists, decision-makers, and the public better understand their changing world. CIESIN specializes in global and regional network development, science data management, decision support, and training, education and technical consultation services. CIESIN is the World Data Center A (WDC-A) for Human Interactions in the Environment. One program CIESIN implemented is the US Global Change Research Information Office (GCRIO). This office provides access to data and information on global change research, adaptation/mitigation strategies and technologies, and global change related educational resources on behalf of the US Global Change Research Program (USGCRP) and its participating Federal Agencies and Organizations. CIESIN is located on Columbia University's Lamont-Doherty Earth Observatory campus in Palisades, New York. For more information contact CIESIN at: PO Box 1000, 61 Route 9W, Palisades, NY 10964. Tel: (914) 365-8920; E-Mail: ciesin.info@ciesin.org

Climate Institute

The Climate Institute (CI) is an international organization devoted to helping maintain the balance between climate and life on Earth. In all its efforts, including the Climate Alert newsletter, the Institute strives to be a source of objective information and a facilitator of dialogue among scientists, policymakers, business executives, and citizens. Currently, the Institute's main focus is energy efficiency and renewable energy. CI's Green Energy Investment project works to mobilize investors to finance and accelerate the development of renewable and "greenhouse-benign" energy technologies. The Small Island States Greening Initiative assists the island states in adapting to climate change and transforming their energy systems to renewables. Through the United Nations Greening Initiative, the Institute assisted the North American Regional office of UNEP in energy upgrades and is now working toward making UN Headquarters a showcase for green technologies. For information, contact: Christopher Dabi, The Climate Institute, 333 ½ Pennsylvania Ave. SE, Washington, DC 20003. Tel: 202-547-0104; Fax: 202-547-0111; E-Mail: cdabi@climate.org; Internet: http://www.climate.org.

The Club of Rome

Members of the Club of Rome are convinced that the future of humankind is not determined once and for all, and that it is possible to avoid present and foreseeable catastrophes when they are the result of human selfishness or of mistakes made in managing world affairs. In 1972 the Club published *Limits to Growth*, a companion book to their World3 computer model indicating trends for growth on this planet. The model considered the effects on growth of population, agricultural production, consumption of non-renewable natural resources, industrial production, and pollution. *Limits to Growth* was followed in the early 1990s by *Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future. Beyond the Limits* encouraged a comprehensive revision of policies and practices that perpetuate growth in material consumption and in population and a drastic increase in the efficiency with which materials and energy are used. The modeling work for these projects spread to the International Institute of Applied Systems Analysis in Vienna, where it inspired many more projects and conferences. Both the books and the computer model, and many successive ones, have become teaching tools and have been instituted in training games. For information, contact: Bertrand Schneider, Secretary General, The Club of Rome, 34 avenue d'Eylau, 75116 Paris, France. Tel: 33-1-47-04-45-25; Fax: 33-1-47-04-45-23; E-Mail: cor.bs@dialup.francenet.fr; Internet: http://www.clubofrome.org/cor.htm.

Committee on Population

The Committee on Population was established in 1983 to bring the knowledge and methods of the population sciences to bear

on major issues of science and public policy. The Committee's work includes both basic studies of fertility, health and mortality, and migration, and applied studies aimed at improving programs for the public health and welfare in the United States and developing countries. The Committee also fosters communication among researchers in different disciplines and countries and policy-makers in government and international agencies. Recent consensus reports of the Committee include *Demographic & Economic Impacts of Immigration, Global Population Projections, Cross-National Research on Aging, Urbanization in the Developing World, Reproductive Health in Developing Countries,* and *Research and Data Priorities for Arresting AIDS in Sub-Saharan Africa*. For information, contact: National Research Council, Committee on Population, 2101 Constitution Ave. NW, HA-172, Washington, DC 20418. Tel: 202-334-3167; Fax: 202-334-3768; E-mail: cpop@nas.edu; Internet: http://www2.nas.edu/cpop.

ECOLOGIC – CENTRE FOR INTERNATIONAL AND EUROPEAN ENVIRONMENTAL RESEARCH

Ecologic was established in 1995 as a not-for-profit institution for applied research and policy consulting. Ecologic is part of the network of Institutes for European Environmental Policy with offices in Arnhem, London, Madrid, Paris and Brussels, as well as a wider network of associated researchers. The mission of this network is to analyze and advance environmental policy in Europe. The main themes of Ecologic's work are: strategic dimensions of environmental policy, European environmental policy, multilateral environmental agreements, trade and environment, environment and development, environment and security policy, environmental policy instruments, green finance, regulation, and enforcement, as well as various issues of air pollution control, waste management, and water management and policy. Ecologic works for diverse sponsors and clients including: the German Federal Parliament, the French Ministry of Environment, the German Foundation for International Development, and Directorat-General XII (Research) of the European Commission and the Organization for Economic Cooperation and Development. In addition, research is carried out for or in cooperation with industry, trade unions, and environmental or conservationist NGOs. Some completed and ongoing projects include "Impact of EU Enlargement on European Environmental Policy," "Water Rights," and "International Workshop on Environment and Security." For information, contact: Ecologic, Pfalzburger Strasse 43-44, 10717 Berlin, Germany. Tel: 49-30-2265-1135; Fax: 49-30-2265-1136; E-Mail: office@ecologic.de; Internet: http://www.envirocom.com/ieep/.

ECOMAN

ECOMAN, the successor to the Environment and Conflicts Project (ENCOP), is jointly run by the Center for Security Studies and Conflict Research at the Swiss Federal Institute of Technology, Zurich, and the Swiss Peace Foundation, Bern. ECOMAN aims at elaborating theoretical approaches and practical options in view of socio-ecologically and politically sustainable and demographically adapted development. For this purpose it analyzes both everyday people's strategies and competition over scarce resources as well as innovative capacities to cope with the degradation of renewable resources in geographically distinct societal and cultural environments. Since the normative horizon "sustainable development" encompasses almost countless elements, the ECOMAN focuses on three interrelated problem areas. It looks to the the political capacities of actor groups at a local and regional (sub-national and transboundary) level in order to regulate environmental and resource conflicts (water, land, forest). Second, it examines the socio-economic capacities of actors at the levels mentioned above as well as the structural or institutional constraints concerning innovative adaptations. Finally, ECOMAN looks at the relevance of life cycle and gender perspectives in the framework of local strategies of survival, reproductive choice, and sustainable management of renewable resources. For more information contact: the Project management at the Center for Security Policy and Conflict Research, ETH-Zentrum SEI, 8092 Zurich, Switzerland. Tel: 41-1-632-4025; E-Mail: encop@sipo.reok.ethz.ch. Swiss Peace Foundation, Wasserwerkgasse 7, P.O. Box 3011, Bern, Switzerland. Tel: 41-31-311-5582; E-Mail: chfried@dial.eunet.ch. Internet: http://www.fsk.ethz.ch/encop/. *[Editor's note: See* ECSP Report *Issue 4 for an article by ENCOP co-director, Gunther Baechler. He is also the author of a new volume on environment and conflict published by Kluwer Press.]*

ENVIRONMENTAL AND ENERGY STUDIES INSTITUTE

The Environmental and Energy Study Institute (EESI) is a nonprofit organization dedicated to promoting environmentally sustainable societies. EESI believes meeting this goal requires transitions to social and economic patterns that sustain people, the environment and the natural resources upon which present and future generations depend. EESI produces credible, timely information and innovative public policy initiatives that lead to these transitions. These products are developed and promoted through action-oriented briefings, workshops, analysis, publications, task forces and working groups. For more information contact: Ken Murphy, Director, 122 C Street, NW, Suite 700, Washington, DC 20001. Tel: 202 628-1400; E-Mail: eesi@eesi.org.

EVIDENCE BASED RESEARCH, INC.

Evidence Based Research (EBR) is a for-profit research and analysis firm specializing in applied social science to support decision-makers in government and private industry. EBR has expertise in several program areas, including environmental security, command and control, indicators and warning, and instability analysis. EBR has extensive experience in the analysis of the impact of environmental change on the security and stability of states. EBR has provided research and technical support to the

Department of Defense and its chairmanship of the NATO CCMS Pilot Study "Environment and Security in an International Context." EBR has also supported the development of regional strategies for the US Southern and European Commands and in the Asia Pacific region. EBR is also engaged in research on how environmental factors may impact political, social, and economic futures. For further information, contact: Evidence Based Research, Inc., 1595 Spring Hill Rd., Ste. 250, Vienna, VA 22182-2228. Tel: 703-893-6800; Fax: 703-821-7742; E-Mail: EBRInc@EBRInc.Com; Internet: http://www.ebrinc.com.

Federation of American Scientists

The Federation of American Scientists (FAS) has several projects which address environment and security linkages. The "FAS Project on Agricultural Research," which replaced the Long Term Global Food Project, aims to ward off complacency in agricultural planning and to promote the responsible use of agricultural research to ensure food availability, social equity and preservation of the environment. The project's newsletter, "Global Issues in Agricultural Research," is available on the FAS web site as well as in print. FAS also sponsors a project to promote the establishment of a global program for monitoring emerging diseases (ProMED), begun in 1992. ProMED Mail is a new electronic information network to link scientists, doctors, journalists, and lay people to share information on emerging diseases and human security. For information, contact: Barbara Rosenberg, ProMED Mail Steering Committee and FAS Coordinator, Federation of American Scientists, 307 Massachusetts Ave. NE, Washington, DC 20002. Tel: 202-546-3300; E-Mail: bhrosen@purvid.purchase.edu; Internet: http://www.fas.org.

Fridtjof Nansen Institute

Established in 1958, the independent Fridtjof Nansen Institute (FNI) conducts applied social science research on international issues of energy, resource management and the environment. Placing a particular emphasis on an interdisciplinary approach, FNI strives to meet academic quality standards while producing user-relevant and topical results. Projects of particular relevance for environmental change and security include the International Northern Sea Route Programme and the Green Globe Yearbook. For information, contact: Willy Østreng, Director, The Fridtjof Nansen Institute, Fridtjof Nansens vei 17, Postboks 324, Lysaker, Norway N-1324. Tel: 47-67-53-89-12; Fax: 47-67-12-50-47; E-mail: iliseter@ulrik.uio.no.

Future Harvest

Future Harvest seeks to promote the importance of agriculture and international agricultural research by raising awareness of their wider social benefits, including peace, prosperity, environmental renewal, health, and the alleviation of human suffering. Future Harvest commissions studies on the links between agriculture and critical global issues. Study results are widely disseminated through the media and world influentials who serve as ambassadors. Current work explores the connection between food insecurity and the degradation of natural resources and violent conflict, as well as the consequences of this conflict for migration, international intervention, and global peace and stability. It examines the environmental conditions of key agricultural areas [*Editor's note: See the Features section for excerpts from the Future Harvest commissioned report,* To Cultivate Peace – Agriculture in a World of Conflict]. Future Harvest was created out of concern that in the next century, the world will need to feed an additional 90 million people a year without jeopardizing the earth's land, water, and biodiversity. It is an initiative of the Consultative Group on International Agricultural Research (CGIAR), a network of sixteen international agricultural research centers, that recognizes the role of science for food, the environment, and the world's poor. For information, contact: Barbara Alison Rose, Director of Operations, Future Harvest, CGIAR Secretariat, World Bank, 1818 H Street, NW, Washington, DC 20433. Tel: 202-473-4734; Fax: 202-473-8110; Email: futureharvest@cgnet.com.

Global Green USA, Legacy Program

The goal of the Legacy Program is to create a legacy of peace by creating a sustainable and secure future. It works toward this goal by facilitating communication and dialogue among stakeholders in the U.S. and abroad to advance the proper, accelerated cleanup of the legacy of military toxic contamination. The Legacy Program also supports the safe and sound demilitarization of both conventional and mass destruction weapons, and thereby full implementation of arms control treaties; and promotes the sustainable re-use of affected facilities. Current efforts include a Washington, DC office focused on public education and policy advocacy to strengthen military-related pollution clean-up, and CHEMTRUST, a four-year project designed to build public participation in Russian and American decision-making for chemical weapons demilitarization. For more information, contact: GG USA Legacy Program, 1025 Vermont Ave. NW, Ste. 300, Washington, DC 20005-6303. Tel: 202-879-3181; Fax: 202-879-3182; E-mail: gleikam@globalgreen.org; Internet: http://www.globalgreen.org.

Global Survival Network

The Global Survival Network (GSN), formerly the Global Security Network, is a non-profit organization that addresses urgent threats to human and environmental welfare. GSN combines investigations, public media campaigns, direct action programs and global networking to identify, expose, and address flagrant violations of environmental and human rights. Some of their accomplishments include establishing a successful, world-renowned wildlife recovery program in the Russian Far East, reducing the consumption of endangered species through their international multi-media Asian Conservation Awareness Program (ACAP),

and addressing human trafficking and associated human rights abuses. For more information, contact: Global Survival Network, P.O. Box 73214, T Street Station NW, Washington, DC 20009. Tel: 202-387-0028; Fax: 202-387-2590; E-Mail: ingsn@igc.apc.org; Internet: http://www.globalsurvival.net.

Global Water Partnership

The Global Water Partnership (GWP) is an international network comprising a large number of developed and developing country government institutions, agencies of United Nations, development banks, professional associations, research institutions NGOs and private sector organizations. GWP initiatives are based on the Dublin-Rio principles articulated in 1992, and are intended to support national, regional and international cooperation and coordination of activities and to foster investment in water resource activities. These initiatives include supporting integrated water resources management; information-sharing mechanisms; developing innovative solutions to conflicts over water resources; suggesting practical policies based on these solutions; and helping to match needs to available resources. GWP also hosts an independent, on-line interactive venue for knowledge and networking called The Water Forum at http://www.gwpforum.org. The Water Forum serves as a tool for information exchange and exploration among individuals, organizations, the private sector, and academia with interest in fresh water management. For more information, please contact: GWP Secretariat, c/o Sida, S-105 25 Stockholm, Sweden. Tel: 46-8-698-5000; Fax: 46-8-698-5627; E-Mail: gwp@sida.se; Internet: http://www.gwp.sida.se.

Institute for Alternative Futures

The Institute for Alternative Futures (IAF) is a nonprofit futures research think-tank founded by Clement Bezold, James Dator, and Alvin Toffler in 1977. The Foresight Seminars were initiated in 1978 and are the Institute's primary public education program. The Seminars provide Congress, federal agencies and the public with health futures research and future-oriented public policy analysis. A Seminar in February 1999 addressed the threat of infectious diseases and drug-resistant pathogens. The IAF also explores environmental topics. For information, contact: Institute for Alternative Futures, 100 N. Pitt St., Ste. 235, Alexandria, VA 22314-3108. Tel: 703-684-5880; Fax: 703-684-0640; E-Mail: futurist@altfutures.com; Internet: http://www.altfutures.com.

Institute for Sustainable Communities

The Institute for Sustainable Communities (ISC) is an independent, non-profit organization, founded in 1991 by former governor of Vermont Madeleine Kunin. ISC provides training, technical assistance, and financial support to communities. The mission of ISC is to promote environmental protection and economic and social well-being through integrated strategies at the local level. ISC projects emphasize participating actively in civic life, developing stronger democratic institutions, and engaging diverse interests in decisionmaking. ISC is based in Montpelier, Vermont with offices in Russia, Macedonia, and Bulgaria. For information, please check ISC's Web site at http://www.iscvt.org or contact George Hamilton, Executive Director, Institute for Sustainable Communities, 56 College St., Montpelier, VT 05602. Tel: 802-229-2900; Fax: 802-229-2919.

International Center for Research on Women

The International Center for Research on Women (ICRW) is a private, nonprofit organization dedicated to promoting social and economic development with women's full participation. ICRW generates quality, empirical information and technical assistance on women's productive and reproductive roles, their status in the family, their leadership in society, and their management of environmental resources. The Center's publications included "New Directions for the Study of Women and Environmental Degradation" and "Women, Land, and Sustainable Development." ICRW advocates with governments and multilateral agencies, convenes experts in formal and informal forums, and engages in an active publications and information program to advance women's rights and opportunities. ICRW was founded in 1976 and focuses principally on women in developing and transition countries. For information, contact: International Center for Research on Women (ICRW), 1717 Massachusetts Ave. NW, Suite 302, Washington, DC 20036. Tel: 202-797-0007; Fax: 202-797-0020; E-Mail: icrw@igc.apc.org; Internet: http://www.icrw.org.

International Food Policy Research Institute

The International Food Policy Research Institute (IFPRI) was established in 1975 to identify and analyze policies for sustainably meeting the food needs of the poor in developing countries and to disseminate the results of the research to policymakers and others concerned with food and agricultural policy. IFPRI is a member of the Consultative Group on International Agricultural Research (CGIAR), an association of 16 international research centers, and receives support from a number of governments, multilateral organizations, and foundations. IFPRI supports Future Harvest, a public awareness campaign that builds understanding on the importance of agricultural issues and international agricultural research. For more information, contact: International Food Policy Research Institute, 2033 K St. NW, Washington, DC 20006. Tel: 202-862-5600; Fax: 202-467-4439; E-mail: ifpri@cgiar.org; Internet: http://www.cgiar.org/ifpri/2index.HTM.

International Human Dimensions Programme on Global Environmental Change (IHDP)

IHDP is an international, interdisciplinary, non-governmental social science program dedicated to promoting and coordinating research aimed at describing, analyzing and understanding the human dimensions of global environmental change. In order to accomplish its goals, IHDP: links researchers, policy-makers and stakeholders; promotes synergies among national and regional research committees and programs; identifies new research priorities; provides a focus and new frameworks for interdisciplinary research; and facilitates the dissemination of research results. This strategy is based on a bottom-up approach, which builds upon existing researchers and research results around the world. Particular emphasis is placed on expanding and strengthening the network of national human dimensions committees and programs and on enhancing the IHDP's capacity to support them. For information, contact: IHDP, Walter-Flex-Strasse 3, 53113 Bonn, Germany. Tel: 49-228-739050; Fax: 49-228-789054; E-Mail: ihdp@uni-bonn.de; Internet: http://ibm.rhrz.uni-bonn.de/IHDP/.

International Institute for Sustainable Development

The mission of the International Institute for Sustainable Development (IISD) is to champion innovation, enabling societies to live sustainably. The IISD contributes new knowledge and concepts, undertakes policy research and analysis, demonstrates how to measure progress, and identifies and disseminates sustainable development information. Its focus is on such topics and issues as economic instruments and perverse subsidies, trade and investment, climate change and the development of sustainable forms of agriculture and forestry. The theme of environment and security is common across their work. For more information, contact: International Institute for Sustainable Development, 161 Portage Ave. East, 6th Floor, Winnipeg, Manitoba R3B 0Y4, Canada. Tel: 204-958-7700; Fax: 204-958-7710; E-Mail: info@iisd.ca; Internet: IISDnet-http://iisd.ca; http://www.iisd.ca/linkages.

International Institute of Applied System Analysis (IIASA)

IIASA is a non-governmental research organization located in Austria. International teams of experts from various disciplines conduct scientific studies on environmental, economic, technological and social issues in the context of human dimensions of global change. Since its inception in 1972, IIASA has been the site of successful international scientific collaboration in addressing areas of concern for all advanced societies, such as energy, water, environment, risk and human settlement. The Institute is sponsored by National Member Organizations in North America, Europe and Asia. For information, contact: International Institute for Applied Systems Analysis, A-2361 Laxenburg, Austria. Tel: 43-2236-807-0; Fax: 43-2236-71313; E-Mail: info@iiasa.ac.at; Internet: http://www.iiasa.ac.at/.

International Peace Research Institute, Oslo (PRIO)

The International Peace Research Institute, Oslo, was founded in 1959. Researchers at PRIO have published significant theoretical contributions on the concept of security while also investigating the specific linkages between environment, poverty and conflict. Future projects center on connections between the natural environment and conflict and migration. PRIO also makes ongoing contributions as the editorial home to both the *Journal of Peace Research* and *Security Dialogue*. For information, contact: Dan Smith, Director, International Peace Research Insitutute (PRIO), Fuglehauggata 11, 0260 Oslo, Norway. Tel: 47-22-54-77-00; Fax: 47-22-54-77-01; E-Mail: info@prio.no; Internet: http://www.prio.no/.

International Policy Council on Agriculture, Food, and Trade

The International Policy Council on Agriculture, Food, and Trade (IPC) is dedicated to developing and advocating policies that support an efficient and open global food and agricultural system that promotes production and distribution of food supplies adequate to meet the needs of the world's population. IPC was founded in 1987 as an independent group of leaders in food and agriculture from twenty developed and developing countries. It conveys its recommendations directly to policymakers, and publishes a variety of papers and studies. For information, contact: International Policy Council on Agriculture, Food, and Trade, 1616 P Street NW, Ste. 100, Washington, DC 20036. Tel: 202-328-5117; Fax: 202-328-5133; E-Mail: lacy@rff.org; Internet: http://www.agritrade.org.

IUCN-The World Conservation Union

IUCN is an international conservation organization with a membership of over 900 bodies, including states, government agencies and non-government organizations across some 140 countries, as well as scientific and technical networks. The mission of IUCN is to influence, encourage and assist societies to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. It has been an important actor in promoting effective global governance through contributions to multilateral agreements such as CITES and the Biodiversity Convention, in environmental mediation (e.g. OkaVango Delta, Victoria Falls) and at the regional and national levels (e.g. national conservation strategies and transboundary ecosystem management). IUCN, with the World Bank, has established the World Commission on Dams whose mandate is to review and make recommendations on the future of large dams, including environmental and social dimensions. IUCN has also conducted an important study for the Organization for Economic Cooperation and Development (OECD) on environment and

security. In October of 1998, IUCN celebrated its 50th Anniversary in Fontainebleau, France, at which environment and security was a major theme. More recently, IUCN is in the planning stage of launching an initiative on Environment and Security intended to build on practical lessons learned and issues drawn from its field presence. IUCN's chief scientist is conducting research on the relationship between war and biodiversity with a book expected to be completed in 1999. The Second World Conservation Congress will take place in Jordan in 2000. For information, contact: Scott A. Hajost, Executive Director, IUCN-US, 1630 Connecticut Ave. NW, 3rd Floor, Washington, DC 20009. Tel: 202-387-4826; Fax: 202-387-4823; E-Mail: postmaster@iucnus.org; Internet: http://www.iucn.org/.

The Natural Resources Defense Council

The Natural Resources Defense Council (NRDC) is a U.S. non-profit environmental protection organization with over 400,000 members and a staff of attorneys, scientists, and specialists addressing the full range of pressing environmental problems. The NRDC has had a long and active program related to environment and security. NRDC has engaged in extensive advocacy with the U.S. government and international institutions on climate change and other global common problems and on environmental challenges in developing countries. Since the 1992 Earth Summit, NRDC has worked on the creation and approach of new mechanisms to hold governments accountable to commitments they have made to move toward "sustainable development." NRDC has a new initiative in China on energy efficiency and renewables. NRDC continues to undertake research, analysis and advocacy related to nuclear weapons production and dismantlement, nuclear materials and proliferation, and nuclear energy. For information, contact: S. Jacob Scherr, Senior Attorney, NRDC, 1200 New York Ave. NW, Washington, DC 20005. Tel: 202-289-6868; Fax: 202-289-1060; Internet: http://www.nrdc.org.

The Nautilus Institute for Security and Sustainable Development

The Nautilus Institute is a policy-oriented research and consulting organization. Nautilus promotes international cooperation for security and ecologically sustainable development. Programs embrace both global and regional issues, with a focus on the Asia-Pacific region. Nautilus has produced a number of policy-oriented studies on these topics which are available on the Internet and in hard copy. Current projects include a U.S.-Japan Policy Study Group focused on transboundary environmental and security issues arising from rapid energy development in Northeast Asia. This group is identifying specific areas for cooperation and collaboration between the United States and Japan to mitigate the negative impacts of the growth in energy use. The Energy Futures project focuses on the economic, environmental and security implications of future energy resource scenarios for Northeast Asia including coal, nuclear power, natural gas, and increased efficiency and renewable sources. The Institute is taking a close analytical look at the concept of "energy security" in Japan, exploring the decision-making options to increase energy security without presupposed conclusions as to the implications for the use of nuclear technology. The Institute also leads dialogues on environmental security issues in the Korean Peninsula and conducts research on trade and environmental issues in the APEC region. The Northeast Asia Peace and Security Network (NAPSNet) and the Asia-Pacific Environmental Network (APRENet) are two information services the Institute offers to subscribers free of charge via E-mail. For information, contact: The Nautilus Institute, 1831 2nd St., Berkeley, CA 94710. Tel: 510-204-9296; Fax: 510-204-9298; E-mail: info@nautilus.org; Internet: http://www.nautilus.org.

Overseas Development Institute

The Overseas Development Institute (ODI) is one of Britain's leading independent think-tanks on international development and humanitarian issues. Its mission is to inspire and inform policy and practice, which lead to the reduction of poverty, the alleviation of suffering and the achievement of sustainable livelihoods in developing countries. ODI does this by linking together high-quality applied research, practical policy advice, and policy-focused dissemination and debate. It works with partners in the public and private sectors, in both developing and developed countries. ODI's work centers on four research and policy programs: the Humanitarian Policy Group, the International Economic Development Group, the Forest Policy and Environment Group, and the Rural Policy and Environment Group. ODI publishes two journals, the *Development Policy Review* and *Disasters*, and manages three international networks linking researchers, policy-makers and practitioners: the Agricultural Research and Extension Network, the Rural Development Forestry Network, and the Relief and Rehabilitation Network. ODI also manages the ODI Fellowship Scheme, which places up to twenty young economists a year on attachment to the governments of developing countries. As a registered charity, ODI is dependent on outside funds and is supported by grants and donations from public and private sources. For information, contact: Overseas Development Institute, Portland House, Stag Place, London SW1E 5DP, United Kingdom. Tel: 44-(0)171-393-1600; Fax: 44-(0)171-393-1699; E-Mail: odi@odi.org.uk; Internet: http://www.oneworld.org/odi/.

The Pacific Institute

The Pacific Institute for Studies in Development, Environment, and Security, directed by Peter H. Gleick, is an independent, non-profit research center created in 1987 to conduct research and policy analysis in the areas of environmental degradation, sustainable development and international security, with an emphasis on the nexus of these issues. The Institute has three broad

goals: 1) to conduct policy-relevant research on the nexus of international security, environmental change and degradation and economic development; 2) to collaborate on complementary research efforts with other organizations and individuals; and 3) to actively work on developing solutions with policymakers, activists and members of the general public. The Institute has been a leader in research on how resource issues may fuel instability and conflict, focusing on freshwater resources, climate change and resource management. Recent projects include: an assessment of the impact of climate change on freshwater ecosystems; analysis of the role of conservation and economic incentives to solve California's water problems, and a critique of efforts to restore the Salton Sea as a viable ecosystem. For information, contact: The Pacific Institute for Studies in Development, Environment, and Security, 654 13th St., Oakland, CA 94612. Tel: 510-251-1600; Fax: 510-251-2203; E-Mail: wburns@pacinst.org; Internet: http://www.pacinst.org.

Pew Center on Global Climate Change

Joining forces under a new organization, the Pew Center On Global Climate Change, diverse sectors of society are now coming together to steer our nation and the world toward reasonable, responsible and equitable solutions to our global climate change problems. The Center brings a new cooperative approach and critical scientific, economic and technological expertise to the global debate on climate change. Established in 1998 by the Pew Charitable Trusts, the Center is directed by Eileen Claussen, former U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs. Major companies and other organizations are working together through the Center to educate the public on the risks, challenges and solutions to climate change. These efforts at cooperation and education are spearheaded by the Center's Business Environmental Leadership Council. The Pew Center is committed to the development of a wide range of reports and policy analyses that will add new facts and perspectives to the climate change debate in key areas such as economic and environmental impacts, and equity issues. For information, contact: Pew Center on Global Climate Change, 2111 Wilson Blvd., Ste. 350, Arlington, VA 22201. Tel: 703-516-4146, Fax: 703-243-2874 Internet: http://www.pewclimate.org.

Population Action International

Population Action International (PAI) promotes the early stabilization of world population through policies that enable all women and couples to decide for themselves, safely and in good health, whether and when to have children. PAI's Population and Environment Program supports this work through research and publications on the relationship of population dynamics to the sustainability of natural resources critical to human well-being. The program also considers interactions between population dynamics and economic change, public health and security. Most recently, the program has begun an initiative related to community-based population and environment activities, defined as provision of services linking natural resources management and reproductive health at the request of communities. In 1998 PAI published *Plan and Conserve: A Source Book on Linking Population and Environmental Services in Communities*. In 1999, a new publication, *Forging the Link: Emerging Accounts of Population and Environment Activities in Communities*, will be released. The Population and Environment Program will also release in 1999 two new studies of population linkages with critical natural resources, one dealing with forests, the second with biodiversity. Other departments within PAI explore issues related to population policy and funding, provision of reproductive health services, the education of girls, and legislative initiatives related to international population issues. For information, contact: Robert Engelman, Director, Population and Environment Program, Population Action International, 1120 19th St. NW, Ste. 550, Washington, DC 20036. Tel: 202-659-1833; Fax: 202-293-1795; E-mail: re@popact.org; Internet: http://www.populationaction.org.

Population and Habitat Campaign

National Audubon Society has launched a major new initiative to build a public mandate for population and family planning and to connect the issues of population growth with habitat. Through this program, Audubon will draw upon its chapters and other community leadership to educate and mobilize citizens from around the country to confront population and environment problems and to communicate with policymakers. The National Audubon Society has embarked on a broad-based effort to strengthen U.S. leadership on population, utilizing its expertise in grassroots activism. The Population & Habitat Program focuses on 1) restoration of international population funding and 2) connecting population issues to state and local habitat issues. To these ends, the Population Program has already put three State Coordinators in place in Colorado, Pennsylvania and New York, with plans for additional Coordinators in California, Florida, Ohio and Texas. These Coordinators will design a three-year plan identifying local population issues and their impacts on birds, wildlife and habitat. They will be conducting training for activists, and providing chapters and the public with ways to become involved in the Program. The Program produced a publication in 1998 called *Population & Habitat in the New Millennium*, by Ken Strom, that helps activists make the connections between population growth, consumption and environmental issues and includes provocative discussions and possible solutions. For more information, contact: Lise Rousseau, Communications Director, Population & Habitat Program, National Audubon Society, 3109 28th St., Boulder, CO 80301. Tel: 303-442-2600; Fax: 303-442-2199; E-Mail: LRousseau@Audubon.org; Internet: http://www.earthnet.net/~popnet.

Population Council

The Population Council, a nonprofit, nongovernmental research organization established in 1952, seeks to improve the well-being and reproductive health of current and future generations around the world and to help achieve a humane, equitable, and sustainable balance between people and resources. The Council analyzes population issues and trends; conducts research in the social and reproductive sciences; develops new contraceptives; works with public and private agencies to improve the quality and outreach of family planning and reproductive health services; helps governments design and implement effective population policies; communicates the results of research in the population field to diverse audiences; and helps strengthen professional resources in developing countries through collaborative research and programs, technical exchange, awards, and fellowships. Research and programs are carried out by three divisions—the Center for Biomedical Research, the Policy Research Division, and the International Programs Division—and by two Distinguished Colleagues. Council headquarters and the Center for Biomedical Research are located in New York City and the Council also has four regional and 15 country offices overseas. About 360 women and men from more than 60 countries work for the Council; more than a third hold advanced degrees. Roughly 40 percent are based in developing countries. Council staff collaborate with developing-country colleagues to conduct research and programs in some 50 countries in South and East Asia, West Asia and North Africa, sub-Saharan Africa, and Latin America and the Caribbean. The organization's funds come from governments, foundations and other nongovernmental organizations, internal sources, multilateral organizations, corporations, and individuals. The Council's current annual budget is $49 million. For information, contact: Population Council, 1 Dag Hammarskjkold Plaza, New York, NY 10017. Tel: 212-339-0525; Fax: 212-755-6052; E-Mail: pubinfo@popcouncil.org; Internet: www.popcouncil.org.

The Population Institute

The Population Institute is a private, non-profit organization working for a more equitable balance between the world's population, environment and resources. The Institute was founded in 1969. Since 1980, it has dedicated its efforts exclusively to creating awareness of international population issues among policymakers, the media, and the public. In pursuing its goals, the Institute works in three specific programmatic areas: the development of the largest grassroots network in the international population field; providing the media with timely and accurate information on global population issues; and the tracking of public policy and legislation affecting population. The Institute's Future Leaders Program recruits college students and recent graduates as staff assistants in its community leaders, information and education, and public policy divisions. An International Fellowship in Population Studies was launched in 1989 to provide six-month internships in a developing country's population and family planning program to qualified applicants. The Institute annually presents Global Media Awards for Excellence in Population Reporting to journalists in 15 media categories, and the Global Statesman Award to world leaders. It is also the official sponsor of World Population Awareness Week (WPAW), a week of awareness-raising activities co-sponsored by organizations worldwide. The Institute publishes the bimonthly newspaper, *POPLINE*, the most widely circulated newspaper devoted exclusively to population issues; the *Towards the 21st Century* series, exploring the interrelationships between population and other major issues; educational materials and books. Regional representatives of the Population Institute are located in Bogota, Columbia; Colombo, Sri Lanka; and Brussels, Belgium. For information, contact Werner Fornos, President, or Bettye Ward, Chair, The Population Institute, 107 Second St. NE, Washington, DC 20002. Tel: 202-544-3300; Fax: 202-544-0068; E-Mail: web@populationinstitute.org; Internet: www.populationinstitute.org.

Population Matters

In 1996, RAND launched Population Matters, a program for research communication that is using different means, methods, and formats for reaching audiences that influence the making of population policy, in the United States and abroad. With support from a consortium of donors led by the William and Flora Hewlett Foundation and including the Rockefeller Foundation and the United Nations Population Fund, the program is addressing the concern that empirical population research is missing opportunities to inform policymaking and public awareness. RAND's involvement is also intended to fill the need for an objective "information broker" who does not espouse a political or ideological point of view on population issues. The program has two principal goals: 1) to raise awareness of and highlight the importance of population policy issues, and 2) to provide a more scientific basis for public debate over population policy questions. To date, the project has examined 12 topics: the record of family planning programs in developing countries; congressional views of population and family planning issues; Russia's demographic crisis; immigration in California; the national security implications of demographic factors; interrelations between population and the environment; factors that influence abortion rates; economic consequences of demographic change; the health and demographic effects of economic crises; the consequences of population growth in California; American public opinion on population issues; and the value of U.S. support for international demographic research. For more information about the project, contact: Dr. Julie DaVanzo, RAND, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138. Tel: 310-393-0411 ext. 7516; Fax: 310-260-8035; E-Mail: Julie_DaVanzo@rand.org; Internet: http://www.rand.org/popmatters.

The Population Reference Bureau

The Population Reference Bureau (PRB) provides information to policymakers, educators, the media, opinion leaders, and the

public around the world about U.S. and international population trends. PRB examines the links between population, environment, and security. PRB has recently conducted three specific projects that deal with these linkages. The first is a cross-national project on population, environment and consumption in collaboration with research institutes in Mali, Mexico, and Thailand. This project examines the impact of household-level transportation on urban air pollution in the U.S. and in the partner nations. By improving methods of measurement, better understanding people's attitudes, and enhancing policymakers' understanding, this project will expand the framework for studying population, consumption, and the environment. The second project, called *The Water and Population Dynamics Initiative*, promotes the sustainable use and equitable management of water resources and aquatic ecosystems. In addition, it strengthens population policies and programs, adhering to the ICPD Program of Action. Through this project, the goal of informing water and population policies and practices—and the effectiveness of combined management strategies—will be applied directly in Guatemala, India, Jordan, Morocco, Pakistan, and Zambia over three years. Finally, PRB's *U.S. in the World* project helps Americans relate population-environment interactions in the U.S. to those in developing nations. The project profiles the demographic, social, economic, and environmental conditions of a U.S. state alongside a comparable developing nation. In turn, Americans learn about the connections between population, the environment, and resource use both locally and globally. In addition, members of partner organizations are able to articulate how their welfare is linked to the well-being of people in developing regions. For information, contact: Roger-Mark De Souza, Population-Environment Coordinator, 1875 Connecticut Ave. NW, Ste. 520, Washington, DC 20009-5728. Tel: 202-939-5430; Fax: 202-328-3937; E-Mail: rdesouza@prb.org.

Resources for the Future

Resources for the Future (RFF) is an independent, nonprofit research organization that aims to help people make better decisions about the environment. RFF is committed to elevating public debate about natural resources and the environment by providing accurate, objective information to policymakers, legislators, public opinion leaders, and environmentalists. RFF has three research divisions: the Center for Risk Management, the Energy and Natural Resources Division, and the Quality of the Environment Division. Currently, RFF has several programs which address environment and security linkages including an ongoing project on Environmental Protection in China and the International Institutional Development and Environmental Assistance Program (IIDEA). IIDEA is aimed at helping countries and institutions become more effective environmental actors by focusing on implementation and management of environmental law and policy. IIDEA's mission is to reduce environmental risk and enhance environmental security by working to bridge the gap between formal commitment and actual practice. For information, contact: Resources for the Future, 1616 P St. NW, Washington, DC 20036. Tel: 202-328-5000; Fax: 202-939-3460; E-Mail: bell@rff.org; Internet: http://www.rff.org.

Rocky Mountain Institute

The Rocky Mountain Institute is an independent, nonprofit research and educational foundation which works to foster the efficient and sustainable use of resources as a path to global security. Its research focuses on the interlinked areas of energy, transportation, real-estate development, water and agriculture, community economic development, corporate practices, and security. The Institute endeavors to develop a balanced concept of national and global security that will ensure a better quality of life for future generations. For information, contact: Rocky Mountain Institute, 1739 Snowmass Creek Rd., Snowmass, CO 81654-9199. Tel: 970-927-3851; Fax: 970-927-3420; E-Mail: outreach@rmi.org; Internet: http://www.rmi.org.

The Royal Institute of International Affairs Energy and Environmental Programme

The Energy and Environmental Programme (EEP) is one of seven research programs based at The Royal Institute of International Affairs. The EEP aims to conduct authoritative research and to stimulate debate on the political, strategic, and economic aspects of domestic and international energy and environmental policy issues. Meetings, study groups, workshops and conferences bring together program sponsors, industry, government, nongovernmental groups and academics. A wide range of policy-relevant EEP publications go through an extensive process of peer review both at RIIA and externally. For information, contact: Energy and Environmental Programme, Royal Institute of International Affairs, Chatham House, 10 St. James's Square, London SW1Y 4LE, England. Tel: 44-(0)171-957-5711; Fax: 44-(0)171-957-5710; E-Mail: eep-admin@riia.org; Internet: http://www.riia.org/eep.html.

Social Science Research Council, Program on International Peace and Security

The Program on International Peace and Security, with funding from the MacArthur Foundation, provides fellowships to help reshape security studies in academia and in such professions as law and journalism to include both a much broader range of substantive research topics and a more diverse set of researchers. The program is based on the view that security concerns—violent conflict and military force—apply to a much wider range of actors and situations than those that appear in the state-centric mode of traditional security thinking. Every year, the Social Science Research Council has awarded approximately 13 two-year dissertation and postdoctoral fellowships for training and research. For information, contact: Social Science Research Council, 810 Seventh Ave., New York, NY 10019. Tel: 212-377-2700; Fax: 212-377-2727; Internet: http://www.wwrc.org/.

Stockholm Environment Institute

The Stockholm Environment Institute (SEI), established in 1989, is an independent, international research institute specializing in sustainable development and environment issues. It works at local, national, regional and global policy levels. The SEI research program aims to clarify the requirements, strategies and policies for a transition to sustainability. These goals are linked to the principles advocated in Agenda 21 and the Conventions such as Climate Change, Ozone Layer Protection and Biological Diversity. SEI examines the policy connections and implications of scientific and technical analysis. This includes management strategies for environment and development issues of regional and global importance. The results of SEI research are made available to a wide range of audiences through publications, electronic communication, software packages, conferences, training workshops, specialist courses and roundtable policy dialogues. The Institute has its headquarters in Stockholm with a network structure of permanent and associated staff worldwide and centers in Boston (USA), York (UK), and Tallinn (Estonia). The collaborative network consists of scientists, research institutes, project advisors and field staff located in over 20 countries. For more information, contact: Nicholas Sonntag, Executive Director, Stockholm Environment Institute, Lilla Nygatan 1, Box 2142, S-103 14 Stockholm, Sweden. Tel: 46-8-412-1400; Fax: 46-8-723-0348; E-Mail: postmaster@sei.se; Internet: http://www.sei.se.

World Resources Institute

Established in 1982, the mission of the World Resources Institute (WRI) is to move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations. Because people are inspired by ideas, empowered by knowledge, and moved to change by greater understanding, WRI provides—and helps other institutions provide—objective information and practical proposals for policy and institutional change that will foster environmentally sound, socially equitable development. To further its mission, WRI conducts policy research, publicizes policy options, encourages adoption of innovative approaches and provides strong technical support to governments, corporations, international institutions, and environmental NGOs. WRI's current areas of work include economics, forests, biodiversity, climate change, energy, sustainable agriculture, resource and environmental information, trade, technology, national strategies for environmental and resource management, business liaison, and human health. For information, contact: World Resources Institute, 10 G Street, NE, Suite 800, Washington, DC 20002. Tel: 202-729-7600; Fax: 202-729-7610; E-Mail: lauralee@wri.org; Internet: http://www.wri.org/wri/.

WorldWatch Institute

WorldWatch is dedicated to fostering the evolution of an environmentally sustainable society through inter-disciplinary non-partisan research on emerging global environmental concerns, including population and security issues. The Institute recently published WorldWatch paper 143, *Beyond Malthus: Sixteen Dimensions of the Population Problem*, by Lester Brown, Gary Gardner, and Brian Halweil, which addresses the effects of population growth on global and regional stability. WorldWatch researcher Michael Renner published in late 1997 Paper 137 on the destructive effects of small arms proliferation entitled *Small Arms, Big Impact: The Next Challenge of Disarmament*; Mr. Renner's 1996 publication *Fighting for Survival: Environmental Decline, Social Conflict, and the New Age of Insecurity* deals with international security and environment/sustainable development. Lester Brown's 1995 book, *Who Will Feed China? Wake-up Call for a Small Planet*, examines the challenges associated with sustainability meeting the needs of a rapidly expanding population. The Institute's annual publications, *State of the World* and *Vital Signs*, provide a comprehensive review and analysis of the state of the environment and trends that are shaping its future. The Institute's bimonthly magazine, *World Watch*, complements these reports with updates and in-depth articles on a host of environmental issues. Other WorldWatch publications discuss redefining security in the context of global environmental and social issues, the impact of population growth on the earth's resources, and other major environmental issues; and WorldWatch will continue these analyses into the future. For information, contact: WorldWatch Institute, 1776 Massachusetts Ave. NW, Washington, DC 20036. Tel: 202-452-1999; Fax 202-296-7365; E-Mail: worldwatch@worldwatch.org; Internet: http://www.worldwatch.org.

Governmental and Intergovernmental Activities

Army Environmental Policy Institute

The U.S. Army Environmental Policy Institute (AEPI) was established by the Under Secretary of the Army based on recommendations made at the Senior Army Environmental Leadership Conferences in 1988 and 1989. The AEPI mission is to assist the Army Secretariat in developing proactive policies and strategies to address both current and future Army environmental challenges. Study topics include developing an environmental training strategy for DoD's approach to Native Americans/Alaskan Indian environmental issues; environmental justice; pollution prevention policy in weapon systems acquisition; privatization and competitive outsourcing; revision of the Army's National Environmental Policy Act (NEPA) implementation regulation; environmental legislation monitoring and impact analysis; and environmental issues that are likely challenges or opportunities for the Army After Next. AEPI's small, multi-disciplined permanent staff is augmented by experts from the private sector,

academia, and other Army, DoD and governmental agencies. The Institute has published more than a dozen policy papers on pertinent environmental issues. Recent titles include *Defining Environmental Security: Implications for the U.S. Army* (12/98) and *Interagency Cooperation on Environmental Security* (10/98), which may be ordered from AEPI. For information, contact: Director, AEPI, 430 Tenth St. NW, Ste. S-206, Atlanta, GA 30318-5768. Tel: 404-892-3099; Fax: 404-892-9381; E-Mail: webmaster@aepi.army.mil; Internet: http://www.aepi.army.mil/.

Centers for Disease Control and Prevention

In 1994, CDC launched the first phase of a nationwide effort to revitalize national capacity to protect the public from infectious diseases. *Preventing Emerging Infectious Diseases* is the 1998 successor to the 1994 plan, with objectives and activities organized under the same four goals: 1) Surveillance and Response. The objectives call for strengthening infectious disease surveillance and response in the United States and internationally, as well as improving methods for gathering and evaluating surveillance data. They also emphasize that surveillance data are critical not only for detecting outbreaks, but also for improving public health practice and medical treatment. 2) Applied Research. The objectives include improving tools for identifying and understanding emerging infectious diseases; determining risk factors for infectious diseases, as well as infectious risk factors for chronic diseases; and conducting research to develop and evaluate prevention and control strategies. 3) Infrastructure and Training. The objectives and activities focus on enhancing epidemiologic and laboratory capacity in the United States and internationally. In the United States, this requires improving CDC's ability to communicate electronically with its partners and strengthening CDC's capacity to serve as a reference center for diagnosis of infectious diseases and drug-resistance testing. The objectives and activities also address the need to enhance the nation's capacity to respond to outbreaks, including those caused by bioterrorism, and to provide training opportunities to ensure that today's workers and future generations are able to respond to emerging threats. 4) Prevention and Control. CDC will work with many partners to implement, support, and evaluate disease prevention in the United States and internationally. As part of this effort, CDC will conduct demonstration programs and will develop, evaluate, and promote strategies that help health care providers and other individuals change behaviors that facilitate disease transmission. Achievement of the objectives described in this plan will improve our ability to understand, detect, control and prevent infectious disease s. The outcome will be a stronger, more flexible U.S. public health infrastructure that is well-prepared to respond to well-known disease problems and to address the unexpected, whether it is an influenza pandemic, a disease caused by an unknown organism, or a bioterrorist attack. For more information, contact: Centers for Disease Control and Prevention, 1600 Clifton Rd., MS D-25, Atlanta, GA 30333. Tel: 404-639-3286; Fax: 404-639-7394; Internet: http://www.cdc.gov/.

Director of Central Intelligence/DCI Environmental Center

The DCI Environmental Center was established in 1997 as a focal point for the intelligence community on environmental matters. The DCI Environmental Center provides comprehensive information from a number of organizations to policymakers on environmental issues that impact U.S. national security interests. Housed in the Directorate of Intelligence, the Center produces, integrates, and coordinates assessments of the political, economic, and scientific aspects of environmental issues as they pertain to US interests. The DEC also provides data to the environmental community. The Center has three main components: the Environmental Issues Branch, a Civil Applications Branch, and a long-term assessment element. The Environmental Issues Branch was established at the Central Intelligence Agency in the late 1980s in response to policymakers' questions concerning global environmental issues, including treaty negotiations and compliance, environmental crime, and foreign environmental policy and performance. Civil Applications was formed in the early 1990s with a group of scientists, now known as MEDEA, to investigate the degree to which intelligence information and assets could enhance our understanding of the Earth's environment. The long-term assessment element focuses on the impact of environmental change on national, regional, and international political, economic, and social dynamics. Specific DEC programs include: assessing transboundary environmental crime; supporting environmental treaty negotiations and assessing foreign environmental policies; assessing the role played by the environment in country and regional instability and conflict; supporting the international environmental efforts of other US government agencies; and providing environmental data to civil agencies.

Environmental Protection Agency

Environmental security is a process whereby solutions to environmental problems contribute to national security objectives. It encompasses the idea that cooperation among nations and regions to solve environmental problems can help advance the goals of political stability, economic development and peace. In addition, by addressing the environmental components of potential security "hot spots," we can prevent or significantly defuse threats to international security before they become a threat to political or economic stability or peace. The U.S. Environmental Protection Agency (EPA) is committed to protecting the U.S. environment from transboundary and global threats. To this end, EPA has embraced the concept of environmental security and it contributes to security through a broad range of activities: 1) anticipating future national security concerns of an environmental nature and determining how to prevent or mitigate them; 2) addressing regional environmental threats and promoting regional environmental security; 3) abating global environmental problems such as climate change, loss of biodiversity, and destruction of the ozone layer; 4) managing hazardous conditions resulting from the legacy of the Cold War; and 5) enforcing international

environmental treaties and combating environmental crimes. To meet its environmental security responsibilities, EPA works in partnership with other agencies that have more traditional national security responsibilities. In 1996, EPA signed a Memorandum of Understanding with the Departments of Defense and Energy to work together on environment and security issues. Here are some of the activities that EPA is engaged in: 1) the Murmansk Initiative: eliminating radioactive waste dumping in the Arctic Ocean; 2) building environmental security and economic stability in the Baltic Sea region through a Great Lakes/Baltic Sea Partnership; 3) NATO's Committee on Challenges of Modern Society working with Alliance and Partner countries on joint studies on the protection of estuarine systems, remedial technologies for water and soil, and cleaner production and processes; 4) The Middle East: environmental diplomacy at work through a series of working groups to address water supply and demand, water conservation, desertification and oil spill contingency planning. In the future, EPA is considering joint work with other U.S. government agencies in China, Panama and the Caspian Sea region. For information, contact: Environmental Protection Agency, 401 M St. NW, Washington, DC 20460-0003. Tel: 202-260-2090; E-Mail: grieder.wendy@epamail.epa.gov.

United Nations Development Programme

Through a unique network of 134 country offices, the United Nations Development Programme (UNDP) helps people in 174 countries and territories to help themselves, focusing on poverty elimination, environmental regeneration, job creation and the advancement of women. In support of these goals, UNDP is frequently asked to assist in promoting sound governance and market development and to support rebuilding societies in the aftermath of war and humanitarian emergencies. UNDP's overarching mission is to help countries build national capacity to achieve sustainable human development, giving top priority to eliminating poverty and building equity. Headquartered in New York, UNDP is governed by a 36-member Executive Board, representing both developing and developed countries. The 1994 UNDP Human Development Report outlined a detailed definition of human security and proposed measures to address insecurities. For information, contact: UNDP, One United Nations Plaza, New York, NY, 10017. Tel: 212-906-5315; Fax: 212-906-5364; E-Mail: hq@undp.org; Internet: http://www.undp.org.

United Nations Environment Programme

The mission of the United Nations Environment Programme (UNEP) is to provide leadership and encourage partnerships in caring for the environment by inspiring, informing and enabling nations and people to improve their quality of life without compromising that of future generations. UNEP was established as the environmental conscience of the United Nations system, and has been creating a basis for comprehensive consideration and coordinated action within the UN on the problems of the human environment. Recognizing that environment and development must be mutually supportive, UNEP advocated a concept of environmentally sound development, which later led to the adoption of "Sustainable Development" concept in the Brundtland Commission Report and the United Nations Perspective Document for the Year 2000 and Beyond. This concept was embodied as an action program called Agenda 21, which was adopted at the 1992 United Nations Conference on Environment and Development (UNCED). Dr. Klaus Töpfer is the current director of UNEP. For more information contact: Mr Tore J. Brevik, Chief, Information and Public Affairs, UNEP, P.O. Box 30552, Nairobi, Kenya. Tel: 254-2-62-1234/3292; Fax: 254-2-62-3927/3692; E-Mail: ipainfo@unep.org; Internet: http://www.unep.org.

United Nations Food and Agriculture Organization

The Food and Agriculture Organization was founded in October 1945 with a mandate to raise levels of nutrition and standards of living, to improve agricultural productivity, and to better the condition of rural populations. Since its inception, FAO has worked to alleviate poverty and hunger by promoting agricultural development, improved nutrition and the pursuit of food security—the access of all people at all times to the food they need for an active and healthy life. FAO offers direct development assistance, collects, analyses and disseminates information, provides policy and planning advice to governments and acts as an international forum for debate on food and agriculture issues. FAO is active in land and water development, plant and animal production, forestry, fisheries, economic and social policy, investment, nutrition, food standards and commodities and trade. It also plays a major role in dealing with food and agricultural emergencies. A specific priority of FAO is encouraging sustainable agriculture and rural development, a long-term strategy for the conservation and management of natural resources. It aims to meet the needs of both present and future generations through programs that do not degrade the environment and are technically appropriate, economically viable and socially acceptable. The current Director-General is Dr. Jacques Diouf. For more information please contact: FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy. Tel: 39-065705; Fax: 39-0657053152; Internet: http://www.fao.org.

United Nations Population Fund

UNFPA is the lead UN body in the field of population. UNFPA extends assistance to developing countries, countries with economies in transition, and other countries at their request to help them address reproductive health and population issues, and raises awareness of these issues in all countries, as it has since its inception. UNFPA's three main areas of work are: to help ensure universal access to reproductive health, including family planning and sexual health, to all couples and individuals on or before

the year 2015; to support population and development strategies that enable capacity-building in population programming; and to promote awareness of population and development issues and advocate for the mobilization of the resources and political will necessary to accomplish its areas of work. The current Executive Director of UNFPA is Dr. Nafis Sadik. For information, contact: United Nations Population Fund, 220 East 42nd Street, New York, NY 10017. Tel: 212-297-5020; Fax: 212-557-6416; E-Mail: ryanw@unfpa.org; Internet: http://www.unfpa.org.

World Health Organization

The mission of the WHO is the attainment by all peoples of the highest possible level of health. Health, as defined in the WHO constitution, is a state of complete physical, mental, social well-being and not merely the absence of disease or infirmity. In support of its main objective, the Organization has wide range of functions, including the following: to act as the directing and coordinating authority on international health; to promote technical cooperation; to assist governments, upon request, in strengthening health services; and to promote and coordinate biomedical and health services research. Dr. Gro Harlem Brundtland is the Director-General of the WHO. Dr. Brundtland has been a key figure in the integration of environment, population, health, and security issues. For information, contact: WHO, Avenue Appia 20, 1211 Geneva 27, Switzerland. Tel: 41-22-791-2111; Fax: 41-22-791-0746; E-Mail: info@who.int; Internet: http://www.who.int.

Global Environment Facility

The Global Environment Facility (GEF) was established as a joint international effort to help solve global environmental problems. The GEF Trust Fund was established by a World Bank resolution on 14 March 1991, while the Facility was formally established in October 1991 as a joint program between the United Nations Development Programme, UNEP and the World Bank. The GEF provides new and additional grant and concessional funding to meet the incremental costs of measures to achieve global environmental benefits in four focal areas, namely: the protection of biological diversity; the reduction of greenhouse gases; the protection of international waters; and, the protection of the ozone layer. The incremental costs of activities concerning land degradation, primarily desertification and deforestation, as they relate to the four focal areas, are also eligible for funding. Currently, more than 150 countries are participating in the Facility. For more information, contact: The GEF Secretariat, 1818 H Street, NW, Washington, DC 20433. Tel: 202-473-0508; Fax: 202-522-3240 or 522-3245; Internet: http://www.gefweb.org.

Office of Science and Technology Policy/National Security and International Affairs

The White House Office of Science & Technology Policy (OSTP) advises the President on science and technology priorities that support national needs, leading interagency coordination of the Federal Government's science and technology enterprise and fostering partnerships with state and local governments, industry, academe, non-governmental organizations, and the governments of other nations. OSTP also acts as the Secretariat for the National Science Technology Council (NSTC) created by President Clinton in November 1993 to strengthen interagency policy coordination. One of the principal priorities of OSTP is strengthening the contribution of science and technology to national security and global stability. Working with the NSTC, OSTP works to promote the role of science and technology in sustainable development including areas such as protecting the environment, predicting global changes, reducing the impact of natural disasters, promoting human health, bolstering the fight against infectious diseases, fostering the information infrastructure, and assuring food safety. As effective progress in these areas requires an international response, OSTP is engaged in priority bilateral and multilateral activities that address these goals. These include ongoing dialogues with Russia, China, Japan, South Africa and the Ukraine, and in the APEC, the OECD, the Summit of the Americas and the G-7. For information, contact: Office of Science and Technology Policy, 1600 Pennsylvania Avenue, NW, Washington, DC. Tel: 202-395-7347; E-Mail: Information@ostp.eop.gov; Internet: http://www.whitehouse.gov/WH/EOP/html/OSTP_Home.html.

Pacific Northwest National Laboratory, The Center for Environmental Security

The Center for Environmental Security (CES) provides a venue to debate and evaluate environmental issues that impact national security for the purpose of addressing underlying motivations for weapons acquisition and developing regional tension-reduction and confidence-building measures. The Center has established a web site to enhance the level of debate and evaluation, and to share information in an interactive medium. The Center provides an open forum for government officials and others who are interested in environmental security to act on their interests through the sharing of ideas, experiences and needs regarding nonproliferation, national security policy and related tools, and compliance with arms control and environmental treaties. The CES seeks to involve a wide range of technical contributors, beginning with the academic community and including non-governmental organizations. Examples include: publishing in key academic journals, inviting members of the academic community to speak at Center-sponsored forums, actively participating in conferences sponsored by academic institutions and research organizations, and networking throughout the research community. The Center adds an environmental dimension to regional security questions. It therefore builds on traditional concerns about regional security, such as political, socio-economic or military disparities combined with a lack of trust between border or resource-sharing countries. Findings from the analysis will inform policy options for effective development of tension-reduction and confidence-building measures. The policy studies and

recommendations from the web site will be the culmination of the Center's activities—the result of the Center's success at integrating interagency needs, contributions of the academic community, and capabilities of the national laboratory system. Interim steps along the policy development path will require the Center and those affiliated with it to prioritize areas of focus, accurately frame questions for exploration within a regional security context, conduct the analytical activities to recommend policy options and utilize interagency decisionmaking processes to select a policy response. For information, contact: Brian R. Shaw, Manager, Center for Environmental Security, National Security Division, Pacific Northwest National Laboratory, 901 D Street, SW, Suite 900, Washington, DC 20024-2115. Tel: 202-646-7782; Fax: 202-646-7838.

United States Department of Agriculture, Natural Resources Conservation Division, International Conservation Division/Office for Sustainable Development

The NCRS addresses the food security and land security aspects of environment and security issues through its International Conservation Division (ICD). The ICD of NRCS is dedicated to assisting in the management and conservation of global resources by collaborating with foreign country institutions in several fields: managing and conserving natural resources; improving capacity for sustainable agriculture; and enhancing capabilities for addressing problems of food security, income generation and the environment. ICD assists foreign nations in these fields through several means: technical assistance; scientific and technical exchange; international meetings and workshops; and the development of project proposals and reviews of ongoing programs. For information, contact: Hari Eswaran, Director, or Gail Roane, International Training Specialist, International Conservation Division, USDA/NRCS, P.O. Box 2890, Washington, DC 20250. Tel: 202-720-2218; E-Mail: Hari.Eswaran@usda.gov or Gail_Roane@usda.gov.

United States Department of Commerce/National Oceanic and Atmospheric Administration, Office of Global Programs

In November 1995, the National Oceanic and Atmospheric Administration (NOAA) collaborated with NSF, NASA, and DOE to organize the International Forum on Forecasting El Niño: Launching an International Research Institute. Chaired by NOAA Administrator James Baker, and hosted by the President's Science Advisor, John Gibbons, the Forum launched a multinational effort to support scientific research and climate forecasting activities of direct relevance to societies around the world sensitive to climate variability. The Forum was attended by 40 countries and more than 20 international and regional organizations, as well as members of the international physical and social science communities. The Forum provided a broad consensus for creation of an International Research Institute (IRI) and network for climate prediction that would embody and "end to end" capability for producing experimental climate forecasts based on predicting ENSO phenomena, and generating information that could be incorporated by decisionmakers worldwide to mitigate climate-related impacts in sectors such as agriculture, water management, disaster relief, human health and energy. The first real world test of this initiative occurred during the 1997-98 El Niño event, the cost of which was estimated to be 22,000 lives lost and $34 billion in damages worldwide. Because of ongoing efforts, IRI and NOAA were well-positioned to rapidly organize climate research and application activities with international and regional partners in Latin America, the Caribbean, Southern Africa, Southeast Asia, and the United States. Climate Outlook Fora, for example, brought together scientists with potential users of climate information to create consensus forecasts that would help countries to prepare for or to mitigate the severe weather-related impacts associated with El Niño. For information, contact: Jim Buizer, Research Applications Division, Office of Global Programs (NOAA/OGP), 1100 Wayne Ave., Ste. 1225, Silver Spring, MD 20910. Tel: 301-427-2089 ext. 115; Fax: 301-427-2082; Internet: http://www.ogp.noaa.gov.

United States Department of Energy

The Department of Energy (DoE) engages in a variety of activities related to environmental security. Over one-third of DoE's budget is spent addressing the legacy of environmental concerns in the manufacture of nuclear weapons. DoE also engages in activities to help reduce U.S. dependence on imports of oil. DoE runs a number of programs devoted to technology development and to the sustainable use of resources:

Office of Fossil Energy

The broad range of Fossil Energy (FE) technical approaches to oil and gas exploration, development and utilization, and coal processing and coal-powered electricity generation provide a base for evaluating and determining the most appropriate technology for international applications. FE provides insights into environmental sensitivities that are necessary for multinational problem resolution. Additionally, FE's environmental security initiative provides the opportunity to enhance cooperative efforts with the Environmental Protection Agency and the Department of Defense. Current FE projects include: coalbed methane production and brine disposal in the Upper Silesia region of Poland; Krakow Clean Fossil Fuels and Energy Efficiency Program; and Electrownia Skawina (Krakow, Poland).

Office of Energy Efficiency and Renewable Energy

The Office of Energy Efficiency and Renewable Energy (EE) conducts research to develop more cost-effective and innovative energy efficiency and renewable energy technologies. These technologies form part of the vital link between national and

international development and the environment by assisting in the development process while reducing U.S. dependence on imported fuels and lowering consumption of potentially polluting energy resources. EE's focus areas include utilities, building, transportation, and electric power generation sectors and cross-cutting efforts with foreign partners. EE has also established channels to promote the transfer of technologies to emerging nations which involve cooperation between the government, private sector, financial community, international organizations, and other interested parties. Organizations for the deployment of such technology include the Committee on Energy Efficiency Commerce and Trade (COEECT), an interagency program which facilitates the worldwide use of U.S. alternative energy and efficiency technologies and services by bringing together potential foreign customers and decision-makers, funding sources and U.S. industry representatives. Programs are designed to assist industry to export goods and services in order to promote sustainable growth, the conservation of environmental resources,

United States Agency for International Development / Center for Population, Health and Nutrition

The technical structure of USAID is divided into four Regional Bureaus and the Bureau for Global Programs, Field Support, and Research. The Regional Bureaus provide technical and programmatic expertise to the missions in each of the four regions (Asia, Africa, Latin America/Caribbean, and Europe/NIS). The Global Bureau is divided into five centers, each corresponding to one of the Agency's five focus areas. As its name suggests, the Global Bureau focuses its efforts on global leadership, technical support to the field, and research and evaluation. The Center for Population, Health and Nutrition (PHNC) performs these functions in Washington, D.C. for the PHN sector. Integral to performing these functions is the pivotal relationship of the PHNC to its partners and stakeholders within USAID, such as missions and regional bureaus, and outside of the Agency, such as the NGO community, host governments, and multilateral organizations.

The Center for Population, Health and Nutrition's (PHN) goals are to stabilize world population growth and to protect human health. In order to achieve these goals, the Agency has adopted a strategy based on four strategic objectives: reducing unintended pregnancies, reducing maternal mortality, reducing infant and child mortality, and reducing STD transmission with a focus on HIV/AIDS. These are a refinement of the historical strategic direction of the Population, Health and Nutrition sector. Looking to the future, the PHN strategy also incorporates principles from the Cairo Program of Action and reflects Agency mandates in the areas of women's empowerment. The PHN program focus, therefore, is on improving the quality, availability, and use of key family planning, reproductive health, and other health interventions in the PHN sector, with sustainability and program integration as essential crosscutting themes. For over thirty years USAID has supported PHN activities through a variety of programs in many countries. From 1985 to 1996, USAID provided approximately $9.670 billion in PHN assistance to developing countries, making it the largest international donor in this sector in the world. In FY1996, obligations in the sector totaled approximately $916 million.

The PHN Center is composed of three offices with complementary objectives and activities: the Office of Population, the Office of Health and Nutrition, and the Office of Field and Program Support. These offices work together to support the field and accomplish the goals and objectives of USAID in this sector. Each office, its divisions, and activities are described below.

Office of Population (POP)

Commodities and Logistics Management Division (CLM): Provides a centralized system for contraceptive procurement, maintains a database on commodity assistance, and supports a program for contraceptive logistics management.

Communications, Management, and Training Division (CMT): Increases the awareness, acceptability, and use of family planning methods and expands and strengthens the managerial and technical skills of family planning and health personnel.

Family Planning Services Division (FPSD): Increases availability and quality of family planning and related services through strengthening government programs, local private voluntary organizations, for-profit organizations, and commercial channels.

Policy & Evaluation Division (P&E): Improves demographic research and data collection, assists in creating a supportive policy environment for population, family planning, and other reproductive health programs, supports strategic planning, and guides efforts to evaluate program impact.

Research Division (R): Supports biomedical research to increase understanding of contraceptive methods and to develop new fertility regulation technologies. Also, through operations research, the Research division seeks to improve the delivery of family planning and reproductive health services.

Office of Health and Nutrition (HN)

Child Survival Division (CS): Provides technical guidance and assists in strategy development and program implementation in child survival, including interventions aimed at child morbidity and infant and child nutrition.

continued on following page

and to expand capacity for economic growth. EE is part of the energy and environmental security activities in a number of international projects.

Office of Nuclear Energy
The Office of Nuclear Energy (NE) provides technical leadership to address critical domestic and international nuclear issues and advances U.S. competitiveness and security. In cooperation with international partners, NE supports the environmental security initiative through the improvement of nuclear activities. For example, NE supports enhancing the safety of Soviet-designed

Nutrition and Maternal Health Division (NMH): Provides technical guidance and assists in strategy development and program implementation in nutrition and women's health, especially maternal health.

Health Policy and Sector Reform Division (HPSR): Assists in the design, implementation, research, and evaluation of health and nutrition policy reform, management and financing issues, including health care financing, quality assurance, pharmaceuticals, private sector, and data activities.

Environmental Health Division (EH): Assists in the design, implementation, research, and evaluation of environmental health activities and issues, including water and sanitation, hazardous wastes, vector-borne tropical diseases, food hygiene, solid waste, air pollution, and occupational health.

HIV/AIDS Division (HIV-AIDS): Provides technical guidance and assists in strategy development, program design, and implementation of HIV/AIDS control activities worldwide.

Office of Field and Program Support (OFPS)
The Office of Field and Program Support (OFPS) was created as a demand driven, service-oriented unit within the PHN Center to ensure that state-of-the-art technical direction is translated into field strategies and programs which achieve impact both globally and at the country level. OFPS has two major functions:
Field Support: Includes Joint Programming and Planning, coordination between the Global Bureau, Regional Bureaus, other donors and the field, and significant technical input into strategic planning and performance monitoring.
Program Support: Includes programming/budgeting for the Center, personnel management, and other tasks related to the global management of PHN resources.

The PHNC and the Missions have developed and implemented the Joint Programming and Planning Country Strategy (JPPC). JPPC is a framework that identifies priority countries for the PHN sector and establishes mechanisms to maximize access to resources for the highest priority countries. The joint programming and planning process brings together staff from all areas at USAID to plan the effective allocation of resources in order to achieve the objectives of country programs. Within the JPPC strategy, Joint Programming Countries are those with the highest potential for worldwide, as well as local or regional, impact across sectors in the PHN arena. A significant level of USAID resources, both in terms of technical staffing and field support, will be committed to achieving results in these countries. Joint Planning Countries are other sustainable development countries that are lower priority in terms of global impact but have PHN sector activities in the form of bilateral programs. Although relatively fewer resources are committed to them than to Joint Programming countries, Joint Planning Countries still receive support from USAID. These countries may also access PHN technical resources. Certain countries are termed special circumstance countries because of significant investments made to date, policy considerations, or crisis conditions. USAID is committed to developing and maintaining strong responsive relationships with these countries and to support their initiatives in the PHN sector. One of the important lessons learned over the thirty years of USAID's efforts in the PHN sector is that maintaining a close connection between field implementation and technical innovations is critical to achieving a lasting impact.

USAID's PHN technical staff offers "one-stop shopping" to USAID's field missions. In this capacity, the PHNC has developed projects that provide access to state-of-the-art technical assistance through a network of Cooperative Agreements (CAs) and contractors. The PHNC also works with missions to translate global initiatives to country-specific situations and provides a ready mechanism by which missions can benefit from the experience and knowledge that USAID has gained worldwide. Working closely with Missions, USAID is developing new approaches for the changing needs of the PHN sector. USAID maximizes the global impact of its programs through support for effective strategic planning at the country level and the allocation of resources across country programs.

This information was excerpted directly from the USAID/PHN web site at http://www. info.usaid.gov/pop_health. Fore more information, contact Joanne Grossi, Office of Population, USAID, Ronald Reagan Bldg. G-PHN-POP Rm 3.06 -041U, Washington, DC 20523. Tel: 202-712-0867; Fax: 202-216-3404; E-mail: jgrossi@usaid.gov; Internet: http//www.info.usaid.gov/pop_health. Please refer to the article by Craig Lasher in ECSP Report *Issue 4 1998 for an additional perspective on USAID/PHN efforts.*

nuclear energy plants and helping host countries upgrade their nuclear safety cultures and supporting infrastructures.

Office of Nonproliferation and National Security

Within the DoE, the Office of Nonproliferation and National Security has sponsored research and workshops that focus on regional environmental security, instability, and the proliferation of weapons of mass destruction. The Office's focus is on regions where nuclear proliferation is an existing concern and its analysis has two goals: (1) determine how environmental issues may intensify or generate regional instabilities; (2) assess the potential for enhancing regional stability through the use of confidence-building measures which focus on environmental problems. The focus on environmental issues also provides and opportunity for scientists and officials to familiarize themselves with the technology and process of cooperative monitoring and verification for environmental issues before applying them to arms control issues which may be more sensitive.

Office of Environmental Management

The Office of Environmental Management (EM) interacts with foreign governments, international corporations, and international regulatory and consensus standards bodies. Principle topic areas include: characterization, handling, transport, and storage or nuclear and chemical wastes; addressing the decontamination and decommissioning of nuclear facilities; developing systems with foreign partners to ensure proper control and monitoring and return of foreign spent fuel provided under the 1950s "Atoms for Peace Program." EM's international agreements allow the United States to obtain unique technical capabilities and engage in exchanges of scientific and technical data and expertise unavailable from U.S. experience like comparative designs of waste storage systems.

Office of Energy Research

The Office of Energy Research focuses on the production of knowledge needed for technology to fulfill the DoE's energy, environment, and competitiveness missions. Research supports the environmental security initiative by providing information on: regional and global environmental change and the consequences of that change; advanced and alternative technology to prevent and/or mitigate environmental pollution (including bioremediation methodologies); advanced health information on toxic pollutants; advanced tools to diagnose and treat human disease; and risk management methodologies. The Office of Health and Environmental Research is responsible for managing the DoE's seven National Environmental Research Parks which operate under the premise that appropriate research can aid in resolving environmental problems locally and internationally.

Climate Change

Through the Office of Policy and International Affairs, the DoE participates in U.S. international delegations that implement Administration policy and negotiate international agreements. DoE provides analysis of policy options for limiting emissions, works with stakeholders, and articulates Administration policy in a wide variety of fora. The DoE co-manages with the EPA the U.S. Country Studies Program (USCS) and the U.S. Initiative on Joint Implementation (USIJI). USCS assists over sixty developing and transition economy countries in conducting studies on emission inventories, technology options, climate impacts, and migration options. USIJI is a pilot program to develop projects which reduce emissions of greenhouse gases in other countries.

United States Geological Survey, EROS Data Center

The U.S. Geological Survey (USGS) has begun distributing film negatives, positives, and paper prints from declassified satellite photographs collected by the U.S. intelligence community during the 1960s and early 1970s. The sale of photographs to the public began with the initial transfer of 2,650 of the total 18,000 rolls of film from the Central Intelligence Agency. The entire collection of these declassified photos incrementally reached USGS National Satellite Land Remote Sensing Data Archive at the Earth Resources Observation Systems (EROS) Data Center in Sioux Falls, South Dakota, in 1996. The online catalog has been updated daily as new rolls are added to the archive. A World Wide Web-accessible graphical catalog and image browse capability for the photo collection is accessible for searching, at no charge, on the Internet through the U.S. Geological Survey's Global Land Information System (GLIS). It is highly recommended that users view the browse images before purchasing the photographs since over 40% are obscured by clouds. For information, contact: U.S. Geological Survey, EROS Data Center, Customer Service, Sioux Falls, SD 57198. Tel: 605-594-6151; Fax: 605-594-6789; E-Mail: custserv@edcserver1.cr.usgs.gov; Internet: http://edcwww.cr.usgs.gov/hyper/guide/disp.

Academic and Professional Meetings

31 MARCH-5 APRIL 1997: THE ASPEN INSTITUTE

"The Convergence of U.S. National Security and the Global Environment"

This conference's four sessions were designed to provide Members of Congress a chance to gain a deeper understanding of environmental issues at the international level and of their growing relevance both to U.S. national security and to U.S. competitiveness in the global marketplace. The four sessions were "Forests and Biological Diversity," "The Legacy of Nuclear Waste," "Energy and Climate," and "Environmental Regulations and U.S. Economic Competitiveness." For more information, contact: The Aspen Institute, 1333 New Hampshire Ave. NW, Ste. 1070, Washington, DC 20036.

12-13 NOVEMBER 1997: U.S. ARMY WAR COLLEGE, CARLISILE, PA

"Cooperation on Environmental Security"

The following article by Kent Hughes Butts is an excerpt from Game Report: International Environmental Security: The Regional Dimension, *Arthur L. Bradshaw Jr., ed.*

In the *1997 National Security Strategy for a New Century* the President states that, "Environmental threats do not heed national borders and can pose long-term dangers to our security and well-being. Natural resource scarcities often trigger and exacerbate conflict… We must work closely with other countries to respond aggressively to these and other environmental threats." Working closely with other nations to solve environmental problems is only possible if there is a wide recognition of the importance of the environment to security and regional stability and there is cooperation in the United States between the various agencies that have an international affairs role. The purpose of the International Environmental Security Executive Seminar and Game held at the Center for Strategic Leadership of the U.S. Army War College was to sow the seeds of cooperation among our international allies and further encourage the nascent cooperation by the agencies of the United States' government. We believe that cooperation on environmental security issues will help promote regional stability, cooperation and communication, and contribute to the ongoing process of conflict resolution.

In the last two years the heads of the United States Department of Defense, Central Intelligence Agency, and Department of State have all singled out the environment as a critical element in promoting the interests of the United States. Perhaps Secretary of State Warren Christopher made the point most succinctly during his address at Stanford University, stating that the environment has a "profound impact on our national interests." Because environmental forces cross borders and oceans, they can provide a direct threat to the prosperity, jobs, and health of the American population; thus, "achieving political and economical stability and U.S. international strategic goals frequently turns on addressing critical natural resource issues."

While the Secretary of State spoke about integrating environmental issues into the objectives of State Department diplomacy, other elements of the U.S. government have also developed environmental security programs, weaving them into efforts to accomplish their agency objectives. The Secretary of Defense made environmental security a pillar of his Preventive Defense concept. The Director of Central Intelligence established a Center for Environmental Intelligence, which has as one of its many unclassified missions, cooperation with the scientific community to provide data for scholarly research aimed at addressing environmental problems. The Environmental Protection Agency (EPA) has drafted a detailed Environmental Security Strategy to guide its international efforts, and the Department of Energy (DOE) has witnessed the establishment of environmental security centers in many of its research laboratories. DOE has also cooperated with the Environmental Protection Agency and the Department of Defense to address the difficult and often contentious issue of low-level radioactive nuclear waste in the Arctic.

The *U.S. Strategic Plan for International Affairs* and the *National Security Strategy* have built on such interagency cooperation and these individual agency policy directions. The Strategic Plan is the document for international affairs that is to serve as a guide in clarifying long-term U.S. foreign policy goals and coordinating the roles and missions of the agencies tasked to accomplish them. The environment figures prominently in the Strategic Plan as an element that must be addressed if the United States is to protect its citizens, and preclude the instability and conflict that result from competition for scarce natural resources. *The National Security Strategy* document of the United States clearly recognizes the importance of the environment in maintaining global security. It suggests that the United States should pursue a *shaping strategy* that allows it to engage proactively in addressing threats to global security such as transnational issues like the environment. The shaping strategy seeks to strengthen alliances, reduce tensions, and promote regional stability. The environment serves as a valuable tool for promoting the cooperation and communication necessary to reduce tensions and build trust among regional states. Inherent to the documents and most agencies' approach to the issue, is the recognition that environmental issues become security issues when they can affect the national security interests.

The environment can provide a foundation for regional solutions and preserve security interests when socioeconomic, ethnic, religious, and historical tensions plague a region, it is often difficult to find common ground on which to build the trust and the communication necessary to avoid misunderstandings. The Madrid peace process established five areas for multilateral cooperation in an attempt to reduce the long-term tensions of the Middle East. Of the five issues, two, water and environment, were environmental in nature and a third, refugees, had strong environmental components. In the intervening time it has been proven that even when the bilateral negotiations have suffered as a result of rising tensions between countries, cooperation on the multilateral issues such as water have continued on, sustaining new-found regional interaction and maintaining avenues for communication. Environmental issues are often perceived as non-threatening and essential to regional governments, and can be used to maintain ties during times when other forms of linkages would be deemed inappropriate. The water management agreements between Pakistan and India have survived several wars, and during the recent straits crisis involving Taiwan, China, and the United States, environmental efforts between the three continued on, while other areas of cooperation were threatened.

In the future, environmental issues will gain even greater importance in regional affairs. Technology continues to provide new and creative ways to use increasingly scarce resources, and the food demands of the exponentially increasing world population will make access to clean water and arable land vital objectives. Population growth will heighten competition for the world's fisheries, essential as a source of protein; and the availability of electrical power and the requirement for ever-increasing economic growth will challenge regions to address air quality standards and minimize cross-border pollution caused by carbon fuels and industrial waste. Environmental issues often have technical components that require access to data or information not available regionally. Moreover, the transnational dimensions of most environmental issues make it difficult for any country to address them effectively without the cooperation of other regional states. Therefore, to deal with environmental issues and maintain regional economic, and political stability in the coming years, increased cooperation between regional states and between agencies of the state governments will be increasingly important.

Perhaps surprisingly one of the most valuable resources in addressing environmental issues has proven to be the military. This trend will continue. Capabilities developed for traditional military missions lend themselves well to the resolution of environmental problems. Frequently the military is the best resourced of all government agencies. It generally has access to substantial transportation assets and a construction engineer unit capable of building primary water treatment facilities and addressing many environmental problems. Moreover, the military brings an understanding of the physical geography of the state, and a presence in virtually all regions of a country and importantly, the distant border areas where many governments find it difficult to maintain legitimacy and address problems critical to the local population. In the highly industrialized United States, the military has played an important role in addressing environmental problems that seemed beyond the scope of local governments. In the Chesapeake Bay, for example, the Department of Defense provided the essential Cray computers to run water flow studies of the Chesapeake Bay estuaries and help the multi-state, multi-municipality effort to improve this important regional economic resource. In the Philippines, the military has served as an important extension to the Department of Energy and Natural Resources in protecting its natural resources. When illegal fishing with dynamite and arsenic became a widespread problem among the thousands of Philippine Islands, the military helped establish artificial reefs and patrolled areas where illegal poaching occurred. In addition, the military has stationed large units in distant regions to help protect forests and wildlife from poaching and to help in the reestablishment of tropical rainforests. This interagency cooperation has enabled the Philippines to aggressively protect natural resources of great importance to its economic stability.

As the interagency community seeks to address its international affairs mission, it is increasing efforts to cooperate on the issues of environmental security. One particularly important opportunity for such cooperation exists with the new Department of State environmental hub concept. As one of the elements of the Environmental Diplomacy initiative, environmental hubs are being established in all regions worldwide to better integrate environmental issues into U.S. foreign policy. The environmental issues of importance to each hub will vary with geography and region yet, each environmental hub will have a plan of action that addresses how it will promote cooperation between the State Department and other U.S. government agencies such as Department of Defense, EPA, the U.S. Department of Agriculture, the National Oceanic and Atmospheric Administration, the United States Agency for International Development (USAID), and the Department of Energy. The hubs will also seek to coordinate with the international community, bringing international donor organizations, NGOs [nongovernmental organizations], and regional governments into a process of cooperation in resolving important environmental issues. The framework of the environmental hubs offers a new and promising opportunity for achieving the most efficiency from the limited resources of all U.S. government agencies. However, the effectiveness of the environmental hubs in promoting regional stability will turn on gaining a full and complete understanding of the importance of regional perspectives on the environment and security.

In an effort to bring together the U.S. interagency community around the notion of the new environmental hub framework, the Center for Strategic Leadership, with the help of its co-sponsors the Department of State, the Environmental Protection Agency, and the Department of Defense, designed this Environmental Security Game and invited members of the international community, diplomats, NGOs, and the International Fellows from the U.S. Army War College to participate. In the course of conducting this game, a substantial number of recommendations were made to U.S. policymakers concerning the most useful and regionally acceptable policies to address environmental security issues, recommendations of significant value in developing U.S. diplomatic, shaping and engagement strategies.

Regional Policy Recommendations and Insights

United States interests turn on regional stability. Environmental issues are now recognized as a major variable in regional instability and conflict. Existing tensions resulting from ethnic, religious, and other regional differences such as economic gaps between rich and poor areas, economic growth, and boundary disagreements may be multiplied by environmental disputes. Alternatively, environmental issues may help to bring about mutual confidence building by encouraging better communication and cooperation between governments that would otherwise be unfriendly competitors. They offer a viable new option for U.S. preventive diplomacy and CINC [Commander-in-Chief] engagement strategies to "shape the international environment."

The Game focused on ways the U.S. could optimize environmental issues to promote regional security. The participants were asked to address policy issues associated with regional environmental security issues. A Read Ahead Book stressed the need for U.S. CINCs to consider environmental security issues as a part of their engagement strategies. It also explained the emerging U.S. Department of State Environmental Hub Concept as a means to deal with environmental issues, and to integrate regional and bilateral environmental issues into diplomacy in order to achieve three purposes:

- help stabilize a region where pollution or the scarcity of resources contributes to political tensions;
- enable the nations of one region to work cooperatively to develop initiatives to attack regional environmental problems;
- strengthen our relationship with allies by working together on internal environmental problems.

Four international teams were organized to represent four major regional areas of the world: The Asia-Pacific, Americas, Middle East and Africa; and Europe and Russia. Each team worked to identify and analyze issues from a *regional* perspective in order to provide U.S. agencies and military CINCs with a regional understanding on how the U.S. could use Environmental Security to promote regional stability. Specifically, each team was asked to determine:

- environmental issues leading to tensions or conflict,
- environmental issues that offer opportunities for cooperation and confidence building measures,
- appropriate U.S. policy options to deal with these issues, and potential barriers to U.S. policy success.

Each team developed and independently briefed their unique regional findings to a panel of senior U.S. interagency policymakers and international diplomats at a series of plenary sessions.

Summary and Conclusions

Several insights were reinforced and validated during the game. First, it was affirmed that environmental issues could be used to promote regional confidence building measures and create opportunities for better communication and closer cooperation between states that might otherwise be or become antagonists. Environmental Security portends a viable new option for United States preventive diplomacy and regional CINC engagement strategies to "shape the international environment."

Public education will play an important role in most of the opportunities for environmental cooperation, and will be critical to forge the trust and communication necessary to achieve the desired results and an enduring success.

There are many players and interested parties likely to be involved in most environmental issues. The United States should not overlook the impact and contribution that regional, non-governmental, and private organizations can make in cooperation with our own interagency capabilities and other donor nations. It may be that the United States' position as a world super power puts it in a unique leadership position to lead, foster, or support ongoing programs, and to better coordinate the overall effort of each organization and country to maximize efficiencies and success.

There was consensus that the Department of State Environmental Hub Concept has substantial potential to facilitate United States environmental policy initiatives to achieve better cooperation, increase efficiencies, prevent duplication, and reduce

14-16 OCTOBER 1998
CENTER FOR ENVIRONMENTAL SYSTEMS RESEARCH, UNIVERSITY OF KASSEL

"Workshop on Quantifying Global Environmental Security"

Participants from both the United States and the European Union gathered at the Cloister Haydau in Germany for the first workshop sponsored by the University of Kassel's Center for Environmental Systems Research directed by Joseph Alcamo. Sessions included presentations on the results of the NATO Committee on the Challenges of the Modern Society study conducted jointly by the United States and Germany, Quantifying Global Water Scarcity, Computing Future Threats to Food Security, Coupling Global Environmental Change with Human Security (the GLASS model), and Key Concepts of Global Environmental Security. The conference ended with a discussion of some key questions and tasks that would facilitate quantifying research as well as discussion of priorities for further developing and testing the GLASS model. For more information, contact: Center for Environmental Systems Research, University of Kassel, Kurt-Wolters-Str. 3, D-34109 Kassel, Germany. Tel: 49-561-804-3898; Fax: 49-561-804-2231; Internet: http://www.usf.uni-kassel.de.

manipulation throughout the regions of the world. Given current funding constraints, however, the potential for HUB success would be substantially enhanced by a program designed around interagency and CINC cooperation.

Finally, the international military officers involved uniformly saw benefits of the new Environmental Security concept for their own national defense organizations and regional security regimes, as well as serving as an engagement mechanism for the U.S. military CINCs. In particular, they expressed a recognition that Environmental Security could serve as a vehicle of cooperation for bridging long extent enmities.

20 JANUARY 1998: ROYAL DUTCH ACADEMY OF SCIENCES (KNAW)

"Environmental Change and International Security"

This Amsterdam workshop was organized by the Centre for Environmental Security and funded by the Dutch Human Dimensions of Global Change Program. A 101-page booklet detailing the proceedings of the workshop may be obtained from either Dr. Ans Vollering, KNAW, Trippenhuis, P.O. Box 19121, NL-1000 GC Amsterdam, or from the Centre for Environmental Security, c/o Prof. H. Tromp, Rijksuniversiteit Groningen, P.O. Box 84, NL-9700 AS Groningen. Tel: 31 50 3635674; E-Mail: H.W.Tromp@rechten.rug@nl.

10-11 FEBRUARY 1998: THE BELLONA FOUNDATION

"Challenges in Ensuring Safe Handling of Nuclear Waste in Northwest Russia"

This project brought Norwegian and Russian government and industry officials together in Brussels to address issues of radioactive waste on the Kola peninsula. A working group, with the planned inclusion of European and U.S. parliamentarians, was created to address issues of technology, funding, taxation, liability, and a time frame for the clean-up. See meeting summary on page 140 for the follow-up meeting. For more information, contact: Thomas Jandl, Bellona USA, P.O. Box 11835, Washington, DC 20008. Tel: 202-363-6810; Fax: 202-363-9873; E-Mail: bellona@bellona.no; Internet: http://www.bellona.org/.

16 MAY 1998: UNIVERSITY OF KEELE, STAFFORDSHIRE, UK

"Is Conflict the Rule: Rethinking the Potential for Cooperation over Transboundary Waters"

For more information, contact: Mr. Ibrahim Erdogan, Department of International Relations, University of Keele, Staffordshire, ST5 5BG, United Kingdom. Tel: 44-1782-583611; Fax: 44-1782-584218; E-Mail: ird50@cc.keele.ac.uk.

1 JULY 1998: POPULATION ACTION INTERNATIONAL AND CONSERVATION INTERNATIONAL

"Planting Seeds and Meeting Needs: Working on Natural Resource Management and Reproductive Health in Communities"

Population Action International and Conservation International presented the fourth in the series of roundtable meetings on community-based population and environment initiatives. The meeting was held on July 1, 1998, at Conservation International in Washington, DC. As interest in smaller families and delayed childbearing increases even in remote rural areas in developing countries, many organizations are now linking services related both to natural resource conservation and family planning at the community level. This roundtable meeting was organized to discuss how work is proceeding in this area. The meeting featured Dr. Teresa de Vargas, executive director of CEMOPLAF, Ecuador who spoke about an evaluation conducted of CEMOPLAF-World Neighbors' linked activities; Robert Engelman, author of *Plan and Conserve, A Source Book on Linking Population and Environmental Services in Communities* and director of PAI's Population and Environment Program; and Jim Nations, vice president of Conservation International for Mexico and Central America. A panel of presenters discussed the latest news from field projects from organizations such as CARE, Centre for Development and Population Activities, World Wildlife Fund, Future Generations, the Summit Foundation and the University of Michigan Population-Environment Fellows Program. This was followed by an open discussion period to exchange lessons learned, discuss overcoming obstacles, and learn about successes in linking natural resource management and reproductive health in communities.

22-24 SEPTEMBER 1998: ORGANIZATION FOR SECURITY AND COOPERATION IN EUROPE

"Regional Environmental Problems and Cooperative Approaches to Solving Them"

The Secretary General of the Organization for Security and Cooperation in Europe (OSCE) stressed the importance of this seminar held in Tashkent, Uzbekistan. It should serve as a stimulus to participating States in Central Asia to define their objectives early and prepare for the 1999 Economic Forum, deriving maximum benefit from that meeting. This seminar was a direct response to the priorities articulated by regional heads of State and Government: the identification of water allocation in Central Asia as a source of potential conflict and destabilization, and the need to develop co-operative strategies for solving this and other environmental problems. The seminar presented a valuable opportunity for OSCE States outside Central Asia to learn more about this important region, and for citizens and their governments within the region to learn more about the OSCE.

Keynote speakers stressed the critical state of the regional environment in terms of risk to human health and the economy.

Speakers called for greater efforts to increase awareness and to involve the public and NGOs in responding to these problems. Special attention was given to 1) nuclear waste management and other environmental problems associated with mining; 2) internal migration as result of economic/environmental degradation; 3) depletion of the forests and arable land with a corresponding impact on climate change and biodiversity; and 4) management of water and energy resources.

In the course of the seminar, governmental and non-governmental representatives of Central Asian States expressed an acute awareness of the security dimensions of these problems and of broader regional issues. They also expressed a desire that the OSCE play a more active role in the region. Participants stressed their eagerness to see Central Asian interests pursued more actively and on a more cooperative basis with OSCE.

Working Group sessions revealed a desire to achieve cooperative regional approaches to solving these grave problems. States in the region encounter problems articulating and implementing such solutions. One theme however was clear: multinational problems require multinational solutions. Participants agreed that this Seminar was a useful first step. Follow-up should consist of 1) supportive actions by the Chairman-in-Office and the new OSCE centers within the region, 2) a more cooperative and consultative approach among external actors, and 3) a more active, consistent and integrated engagement by regional actors. For more information, contact: The Secretariat, Office of the Coordinator of OSCE Economic and Environmental Activities, OSCE, Kärntner Ring 5-7, A-1010 Vienna, Austria. Tel: 43-1-514-36-151; Fax: 43-1-514-36-96; E-Mail: pm-oceea@osce.org.

5-6 NOVEMBER 1998: ORGANIZATION FOR SECURITY AND COOPERATION IN EUROPE

"Regional Environmental Problems and Cooperative Approaches to Solving Them: The Case of the Black Sea Region"

The Minister of Environment of the Republic of Turkey welcomed participants to Istanbul and described some of the key environmental problems in the Black Sea region. The Co-ordinator of OSCE Economic and Environmental Activities explained the OSCE's comprehensive concept of security and gave several examples of environmental security problems in and around the Black Sea (e.g. nuclear safety issues, shipping and transport issues, and uneven compliance with international conventions). He called on states in the region to engage in fuller dialogue with citizens groups. States should also adopt a more cooperative approach toward each other as they seek solutions to problems which are important in and of themselves, but which are also important because they contribute to increased tension within the region. Keynote speakers explained ongoing environmental clean-up activities supported by the Black Sea Economic Cooperation, the United Nations Development Programme, the United Nations Economic Commission for Europe, and other parts of the United Nations system, the European Commission, and other actors. Many participants welcomed the OSCE's approach in bringing together diplomats, governmental specialists in each of these fields, the private sector, and NGOs. Further, they expressed the hope that future activities of this type would help generate effective solutions to environmental security problems based on the synergy among the many categories of participants. Not only could activities of this sort help generate solutions to environmental security problems, but—as more than one participant pointed out—they could also reinforce democratic practices by making broad-based public participation a standard part of governmental behavior. For more information, contact: The Secretariat, Office of the Coordinator of OSCE Economic and Environmental Activities, OSCE, Kärntner Ring 5-7, A-1010 Vienna, Austria. Tel: 43-1-514-36-151; Fax: 43-1-514-36-96; E-Mail: pm-oceea@osce.org.

16-18 NOVEMBER 1998: GLOBAL ENVIRONMENTAL CHANGE AND HUMAN SECURITY PROJECT (GECHS) AND THE AUSTRALIAN HUMAN DIMENSIONS PROGRAMME (Aus-HDP)

"Water and Human Security in Southeast Asia and Oceania"

GECHS and Aus-HDP hosted a workshop in Canberra, Australia, funded by the Asia-Pacific Network on Global Change (APN) and START, the Global Change System for Analysis, Research and Training. Thirty-eight scholars from fifteen countries attended the workshop, and fifteen papers were presented that focused on the following four themes: water and urbanization; water, food security, and agricultural sustainability; water and indigenous people; and institutional cooperation and conflict over water. Keynote presentations were given on Environment and Human Security (Richard Matthew, USA), Water and Environmental Change in Southeast Asia and Oceania (Lorraine Elliot, Australia), and Water and Development in Southeast Asia (Avijit Gupta, U.K.).

Water is a prime example of how resource scarcity or degraded quality may pose a considerable threat to national and human security. The problem is becoming acute in Southeast Asia, with the demand for water increasing rapidly as the result of population increase, rapid urbanization and economic growth, and expansion of agricultural land.

As attempts are made in the region to increase the supply of water to satisfy this demand, considerable environmental and social impacts have occurred. Because the magnitude and frequency of extreme events – such as droughts – will likely continue, there will be greater vulnerability for populations and activities dependent on water resources.

Some of the most interesting discussions at the workshop centered on the issue of water and indigenous peoples in the region. In Australia, for example, the indigenous population suffers poorer health than the population at large. Part of this is the result of poor water quality, or limited access, and it particularly affects the 27% of aboriginal peoples living in rural regions. Even more vulnerable are indigenous peoples living on small islands in the Pacific, where water supply is often variable, and water-related health problems are widespread.

Similar problems occur in large and/or rapidly growing cities in the region. The mega-cities of Bangkok, Jakarta and Manila exhibit water infrastructure that is not able to cope with the rapid growth of the urban population. They also suffer from extremely high water pollution loads in their waterways due to industrialization, lack of proper wastewater disposal facilities, indiscriminate solid waste disposal and uncontrolled influx of rural population. Bangkok has an added problem in that uncontrolled withdrawal from the aquifer (mainly by industry) has resulted in land subsidence (the city is literally sinking).

All agreed that the problems are not just technical ones; often it is easy to state "the problem," but difficult to find political, social, and economic solutions. Since Southeast Asia and Oceania are not "water scarce" regions per se, the two key issues become water quality and supply/distribution. However, there is still an issue of seasonality with respect to water availability in many regions. It is important to view water in human security terms, so it is not just an issue of "supply and demand" (i.e. legal frameworks; development of legislation, treaty negotiations). To achieve this, we need to develop an understanding of water as a resource like land, and consider structured relationships (between water and land, water and humans). We need to change the relationship between researcher/researched and adopt an action learning approach to research. The integration of models that interface with political "realities" is also required, and implies that our models and analysis must be as participatory as possible.

There are tremendous implications/interconnections within systems (forests, fisheries, etc). As such, we need to recognize these interconnections, and ensure that different cultures' own water management/preservation strategies are taken into account. It is apparent that we still lack knowledge in terms of different uses of water (including symbolic uses), the type and validity of data, and the value we place on other perspectives.

16-17 NOVEMBER 1998: 2ND ANNUAL INTERNATIONAL ENVIRONMENTAL SECURITY EXECUTIVE SEMINAR

"The Caspian Sea and International Environmental Security"

Report of the Center for Strategic Leadership, U.S. Army War College

By Kent Hughes Butts and Arthur L. Bradshaw, Jr.

The Caspian Sea and International Environmental Security Game was the second annual international environmental security exercise conducted by the Center for Strategic Leadership (CSL) of the U. S. Army War College. Held on 16-17 November 1998, this year's exercise focused on the energy resources, geopolitics, and environmental security of the Caspian Basin. The co-sponsors of the exercise were the Deputy Assistant Secretary of State for Economics and Business Affairs, U.S. Department of State, Mr. Peter Bass, and the Principal Assistant Deputy Under Secretary of Defense (Environmental Security), Mr. Gary Vest. The purpose of the Caspian exercise was to examine the petroleum pipeline options in the context of U.S. National Security interests and the increased importance of environmental issues to global energy production and transport. The game objective was to promote better communication and understanding of the region's many issues and challenges between participants, their organizations, and countries.

Participants included U.S. national security policymakers; senior international oil company executives; academics; ambassadors or other high-level representatives from the Turkmenistan, Kazakhstan, Georgia, and Turkey Missions to the United States; representatives from the U.S. Departments of State; Defense, Energy, and the Environmental Protection Agency; the U.S. Central and European Military Commands; the Joint and Army Staffs; and 40 U.S. Army War College International Officers. The game was preceded by a plenary session with initial remarks by Mr. Bass and Mr. Vest, paper presentations by Robert Ebel, Center for Strategic Studies; Brian Shaw, DOE; Major General Charles Wax, European Command; and John Daly, Georgetown University; and regional overviews by the ambassadors of the regional states.

Workgroup sessions then broke into eight teams representing the governments and oil interests of Azerbaijan, Kazakhstan, Turkey, Russia, Iran, the United States, and the eastern and western Caspian oil producers. The game scenario drew out the diverse experience of the players and included two controversial issues: environmental constraints on the Caspian and the issue of pipelines through Iran. In order to broaden their understanding of political issues, players served on country teams other than their own. Negotiations, individual interaction between participants, role-playing, and group decision making were critical to the successful outcome of the game. This afforded participants the opportunity to explore the relationships between critical variables in a challenging and realistic environment. Participants presented the views of their teams in a final plenary session and open discussion.

The Caspian Basin is an area of potentially large oil reserves set within a regional framework of political instability. Although reserve figures cannot be proved without further drilling and exploration, analysts agree that Caspian oil will provide a significant non-Persian Gulf source of oil. Respected estimates of the economically recoverable oil reserves are between 15-35 billion barrels. This reserve could translate into regional production figures of approximately 3.5 millions barrels a day by 2010. Although significant, it is only equal to roughly half of Saudi Arabia's oil production. Nevertheless, the Caspian does provide an alternative to the politically complex and militarily threatening Persian Gulf's oil reserves, which contain 65.3 percent of the world's conventional oil reserves and will be expected to provide approximately 90 percent

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A proceedings volume based on the paper presentations and summary discussions will be published in the fall of 1999. Follow-up workshops are planned for Thailand (Water Conflicts and Cooperation: The Salween Basin; September 1999) and Bonn (Water and Urbanization; November, 1999). For additional information on the Australia workshop or the upcoming workshops, contact Dr. Steve Lonergan, Chair, GECHS Scientific Planning Committee, University of Victoria, P.O. Box 3050, Victoria, BC V8W 3P5. Tel: 250-721-7339; Fax: 250-595-0403; E-Mail: lonergan@uvic.ca; Internet: www.gechs.org.

23-24 NOVEMBER 1998: NORWEGIAN ROYAL MINISTRY OF FOREIGN AFFAIRS

"Environmental Conflict and Preventive Action"

Fifty-five diplomats, practitioners, and scholars gathered at the Lysebu conference center for this event, organized by the Norwegian Institute of International Affairs (NUPI) in cooperation with the Centre for Environmental Studies and Resource Management

of Asia's petroleum supply by the end of the next decade. Russian and Chinese interests in the region highlight its geopolitical importance. The success of policies aimed at promoting regional stability and sustainable economic development will turn on policymakers' understanding of the interaction of the critical variables such as energy, the environment, culture, economics, and politics.

Environmental concerns affect the recovery of petroleum globally, but the consideration given to them varies greatly. In the case of the Caspian Basin, largely Western oil companies are conducting exploration and production in consonance with the environmental laws of the host countries. Environmental concerns have surfaced widely in the context of Caspian oil production and transport. The rising level of the Caspian Sea has complicated boundary and oil reserve ownership determination, production, and transport. Falling fish catches have drawn public attention to the petroleum industry and complicated economic and energy policy formation.

In the transport of petroleum, environmental issues are at the center of pipeline routing decisions. Both Iran and Russia have repeatedly raised environmental issues in their efforts to influence the choice of pipeline routes. Turkey, in particular, has registered great concern about the increased flows of oil through the Bosporus Strait that will be generated by full scale Caspian Basin production. Further, it has said that it will limit oil flows through this strategic waterway for environmental and safety reasons.

Rules governing the commercial shipment of goods through the Bosporus were codified in the 1936 Treaty of Montreaux. At that time, only 17 ships per day passed through the Bosporus, the largest of which were 13 ton grain carriers. By 1998, shipping levels had reached 110 vessels per day with 200,000 ton tankers carrying petroleum and natural gas. A series of oil tanker accidents have occurred within the waterway that have devastated the Bosporus ecosystem and led Turkey to warn that unlimited increases in oil traffic would not be tolerated. The Treaty of Montreaux does not preclude Turkey from mandating safety parameters. Mandatory double hulling of oil tankers, limited tanker size, and full tanker compliance with strict operational standards have been suggested as legal means by which Turkey may control Bosporus oil transport. This potential environmental constraint of energy transport has factored heavily in the consideration of multiple overland pipeline routes.

In designing the game, the Center for Strategic Leadership wished to fully explore this environmental-energy nexus and its implications for the economic and geopolitical variables of the Caspian and began the game with an oil tanker disaster in the Bosporus. The game provided key insights into the role of environmental change in national security and energy transport, and was conducted during a period of falling oil prices, a depressed Asian economy, and high unemployment in Europe. Participants emphasized the importance of the economy in their findings, particularly in a weak demand market. Market forces were seen as an honest broker and the driver of pipeline decisions. With world oil demand low, pipeline developers will try to resist political pressures to construct multibillion dollar pipelines, preferring to delay construction until the projected return on investment and proved oil reserves rise. Thus, in the short term, Caspian oil would likely be shipped via upgraded existing pipelines to the Black Sea ports of Supsa and Novorossiysk. However, political pressures for a diverse array of secure pipeline options that minimize Russia's control of oil transport will continue to be a major priority of the producing states.

The environment, though not deterministic, will play a significant role in pipeline negotiations; environmental costs factor heavily in market based decisions. Concerns over increased oil transit of the Bosporus will be met in the short term by pushing more Caspian oil into the markets of the Black Sea littoral states and Eastern Europe. In the longer term, the expected increases in Caspian Basin reserves and oil production, and the recovery of the Asian economies, will increase the importance of environmental issues, particularly regarding the Bosporus. Finally, environmental security issues were seen as a valuable mechanism for engagement, having the potential to promote cooperation and improved communications between states in a region of longstanding ethnic, political and religious differences, irredentism, and territorial disputes.

For more information, contact Kent Hughes Butts or Arthur L. Bradshaw, Jr., Center for Strategic Leadership, U.S. Army War College, Carlisle Barracks, PA 17013-5050. Tel: 717-245-3728; Fax: 717-245-4309; E-Mail: buttsk@csl.carlisle.army.mil or bradshawa@csl.carlisle.army.mil.

(CESAR) and the International Peace Research Institute, Oslo (PRIO). The topic was the linkage between environmental change and conflict.

The clear majority view based on currently available evidence is that environmental factors are neither sufficient nor necessary causes of political conflicts, but they can be an underlying variable and are often used as a pretext for violent behavior. Environmental crises may be signs of a more general political and socio-economic failure. Overall, the problems in conflict causation are integrated with each other, and policy instruments must be capable of an equal degree of integration. Conference participants identified policy conclusions for both Norway and the international community that could promote stability. For more information, contact: Espen Barth Eide, Norwegian Institute of International Affairs, Gronlandsleiret 25, Postboks 8159 Dep., 0033 Oslo, Norway. Tel: 47-2205-6551; Fax: 47-2217-7015; E-Mail: EspenB.Eide@nupi.no.

21-23 JANUARY 1999: NATO ADVANCED RESEARCH WORKSHOP (ARW)

"Responding to Environmental Conflicts: Implications for Theory and Practice"

The NATO Advanced Research Workshop was held in Budapest, Hungary and co-directed by Alexander Carius (Ecologic, Berlin, Germany) and Arpad Vincze (Zrinyi Miklos University of National Defence, Budapest, Hungary). The ARW provided a working forum for promoting international collaboration among scientists, politicians, and academics from Europe, the United States, and Central and Eastern Europe.

The workshop began with a discussion of conceptual, methodological and theoretical aspects of the relationship between environment and security, followed by critical assessment of the literature to date. To gain a more regional perspective of environment and security challenges, various case studies were presented covering: the Hungarian military and its role in environmental protection; regional security in Russia and the Baltic states; nuclear power plant and radioactive waste facility impacts on security; planning for natural disasters to side-step security challenges; and water conflicts on the Danube River, the Black Sea and the Aral Sea.

The workshop also focused on possible policy approaches in the areas of environmental and development policy, foreign and security policy, and economic cooperation that target environmentally-induced conflicts. Nongovernmental options to tackle the complex dynamics of this type of conflict were also explored. Participants debated the use and further development of existing policy and legislative instruments and strategies in the respective policy areas to address and prevent environmental degradation, resource scarcity and political, social and economic capacities.

The workshop concluded with a discussion of the role of risk assessment in conflict resolution and available methods and databases for modeling environmental conflict.

The conference proceedings will be published by Kluwer Academic Publishers. For more information about the ARW, contact: Eileen Petzold-Bradley, Ecologic-Centre for International and European Environmental Research, 165 Friedrichstrasse, D-10117 Berlin, Germany. Tel: 49-30-2265-1135; Fax: 49-30-2265-1136; E-Mail: petzold-bradley@ecologic.de.

16-20 FEBRUARY 1999: INTERNATIONAL STUDIES ASSOCIATION

"One Field, Many Perspectives: Building the Foundations for Dialogue"

This annual scholarly convention, held this year in Washington, DC, included multiple panels on environment, population, and security issues. Panels featured quantitative and qualitative paper presentations on the links between environment, population, conflict, and security. For more information, contact: Thomas J. Volgy, International Studies Association, 324 Social Sciences, University of Arizona, Tucson, AZ 85721. Tel: 520-621-7715; Fax: 520-621-5780; E-Mail: isa@u.arizona.edu; Internet: http://www.isanet.org.

17 FEBRUARY 1999: NATIONAL SECURITY STUDY GROUP

"Environmental Security Workshop"

The National Security Study Group (NSSG) hosted a workshop to examine the relationship developing between the environment and national security from 1999-2025. The focus was on particular environmental issues such as natural resource disputes and ways in which environmental issues overlap with national security concerns. For information, contact: William Lippert, National Security Study Group, 1931 Jefferson Davis Hwy., Crystal Mall 3, Ste. 532, Arlington, VA 22202-3805. Tel: 703-602-4175; E-Mail: lippertw@nssg.ncr.gov.

22-23 FEBRUARY 1999: ORGANIZATION FOR SECURITY AND COOPERATION IN EUROPE

"Regional Environmental Problems and Cooperative Approaches to Solving Them: The Case of the Mediterranean"

On 22-23 February 1999, the OSCE held, jointly with the Government of Malta, the third sub-regional seminar in a series of four designed to help participating States prepare for the May 1999 Economic Forum in Prague. Representatives of four Mediterranean Partner for Co-operation countries and 20 OSCE participating States, as well as many international organizations and NGOs from throughout the Mediterranean region, took part in the seminar.

Participants emphasized the consistency of national goals in the environmental field and called for more active dialogue

within governments and among governments to facilitate cooperation. They also noted the need to increase dialogue within national governments, observing that those responsible for foreign policy and security-related decisions should pay closer attention to environmental questions. Furthermore, there was agreement that governments need to promote informational exchanges and dissemination with regard to existing international conventions. Participants also agreed on the need for broader public environmental education. The working groups stressed that fuller implementation of existing conventions, including mechanisms for dispute resolution, should be a primary focus.

Environmental aspects of security need to become a regular part of the OSCE agenda and should be adequately addressed in the OSCE's ongoing work on a Document-Charter on European Security. In that connection, participants also stressed the need to identify comparative advantages among organizations and to ensure coordination and synergy, especially among the organizations active in the Mediterranean area.

It was widely recognized that political problems, as well as economic difficulties, in the region often hinder cooperation in the Mediterranean. Particular concern was expressed over the environmental, ecological and biological damage caused by conflicts in the region. However, it was noted that multilateral environmental cooperation is permitting a more holistic approach to the resolution of these problems. For information, contact: The Secretariat, Office of the Coordinator of OSCE Economic and Environmental Activities, OSCE, Kärntner Ring 5-7, A-1010 Vienna, Austria. Tel: 43-1-514-36-151; Fax: 43-1-514-36-96; E-Mail: pm-oceea@osce.org.

24-26 JUNE 1999: INTERNATIONAL HUMAN DIMENSIONS OF GLOBAL CHANGE PROGRAM (IHDP)

"1999 Open Meeting of the Human Dimensions of Global Environmental Change Research Community"

An increasing number of researchers are interested in the human causes and impacts of global environmental change, as well as recognizing that local and regional scales are critical for their studies. Following two successful international meetings held in 1995 and 1997, the 1999 Open Meeting aimed to promote exchanges of information on current research and teaching and to encourage networking and community-building in this emerging field. The meeting, hosted by the Institute for Global Environmental Strategies (IGES, Japan), was held in Shonan Village, an international conference center in a scenic setting southwest of Tokyo. Plenary talks and commentaries on the following topics took place: conflict and the environment; lifestyles, attitudes and behavior; decision-making processes in response to global environmental change; land use and land cover change; valuation of ecosystem services; and demographic change and the environment. For information, contact: 99 Open Meeting Secretariat, IGES, Shonan Village Center, 1560-39, Kami-Yamaguchi, Hayama, Kanagawa 240-0198, Japan. Fax: 81-468-55-3709; E-Mail: hdgec@iges.or.jp.

12-13 AUGUST 1999: MAX PLANCK INSTITUTE FOR DEMOGRAPHIC RESEARCH

"Population and the Environment: Modeling and Simulating this Complex Interaction"

This workshop seeks to bring together people from the disciplines of demography, economics, and ecology to discuss theoretical models and empirical investigations which may be used to gain insight into the relationship between population change and environmental change. For more information, contact: Dr. Alexia Prskawetz, Max Planck Institute for Demographic Research, Doberaner Strasse 114, 18057 Rostock, Germany. Tel: 49-381-2081-0; Fax: 49-381-2081-202; E-Mail: webmaster@demogr.mpg.de; Internet: http://www.demogr.mpg.de/.

18-19 SEPTEMBER 1999: NORMAN PATERSON SCHOOL OF INTERNATIONAL AFFAIRS, CARLETON UNIVERSITY

"Human Security: Policy Implications for the 21st Century"

This conference is being organized by a committee of students from the Norman Patterson School of International Affairs. Papers dealing with aspects of human security in a policy-relevant manner will be presented in a panel format. The following topics are of particular interest: Personal Security, Health Security, Drug Trade, Economic Security, Environmental Security, Migration, Ethnic Conflict, Food Security, and Terrorism. For more information, contact: Human Security Conference Committee, Norman Paterson School of International Affairs, Level 2A Paterson Hall, Carleton University, 1125 Colonel By Drive, Ottawa, ON K1S 5B6, Canada. E-Mail: human_security@carleton.ca; Internet: http://www.carleton.ca/humsec.

14-18 MARCH 2000: INTERNATIONAL STUDIES ASSOCIATION

"Reflection, Integration, Cumulation: International Studies Past and Future"

This annual scholarly convention, to be held in Los Angeles, CA, will include multiple panels and paper presentations on environment, population, and security issues. Panels will feature quantitative and qualitative paper presentations on the links between environment, population, conflict, and security. Whereas the 1999 ISA conference called for a "dialogue" *across* perspectives, the theme for ISA 2000 is self-critical, state-of-the-art "reflection" *within* epistemologies, perspectives, and subfields. For more information, contact: Frank Harvey, 2000 ISA Program Chair, Department of Political Science, Centre for Foreign Policy Studies, Dalhousie University, Halifax, NS B3H4H6, Canada. Fax: 902-494-3825; E-Mail: isaprog@is.dal.ca; Internet: http://csf.colorado.edu/isa.la/.

Internet Sites and Resources

Following is a list of Internet sites and forums which may facilitate research and policy efforts. The Environmental Change and Security Project encourages readers to inform us of other relevant sites for inclusion in the next issue by email at ecspwwic@wwic.si.edu or by telephone at (202) 691-4130. This list may also be downloaded from our website at http://ecsp.si.edu.

Government Institutions

ARMY ENVIRONMENTAL POLICY INSTITUTE
http://www.aepi.army.mil/
This site contains in-depth information on the Army's environmental policies and practices. It summarizes recent environmental legislation, lists actions that Congress has taken or scheduled on environmental legislation, and provides additional information on legislative issues. The site also includes a copy of the 1994 Environmental Trends Update, as well as links to government policies and regulations relating to the environment.

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
http://www.calepa.cahwnet.gov/
This California EPA home page provides numerous listings of its policies, programs and initiatives. In particular, the page features information on decommissioning and cleaning up military bases.

GODDARD DISTRIBUTED ACTIVE ARCHIVE CENTER (DAAC)
http://www.xtreme.gsfc.nasa.gov/
DAAC's site provides data on global change and research related to environmental issues such as the global biosphere.

PACIFIC NORTHWEST NATIONAL LABORATORY, CENTER FOR ENVIRONMENTAL SECURITY
http://www.pnl.gov:2080/science.html
This site outlines the Pacific Northwest National Laboratory science and technology program. It places specific focus on its current research and development programs relating to environmental restoration and change, energy, and national security.

SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER (SERC)
http://www.serc.si.edu
This website highlights SERC's latest research on topics such as global change, population and community ecology, and integrating ecosystem and community ecology. SERC also lists its publications and current research interests of SERC scientists. These interests cover the relationships among atmospheric, terrestrial, and aquatic environments.

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT / CENTER FOR POPULATION, HEALTH, AND NUTRITION (PHN)
http://www.info.usaid.gov/pop_health
This site provides an overview of PHN programs on Population/Family Planning, Child Survival, and HIV/AIDS, and also includes a strategy paper on Stabilizing World Population Assistance, general demographic data, and data about specific health practices.

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT: POPULATION AND ENVIRONMENT E-MAIL FORUM
POPENV-L@info.usaid.gov
The forum's primary objective is to facilitate the distribution of publications, reviews, conference announcements, and calls-for-papers that are germane to this field.

UNITED STATES BUREAU OF THE CENSUS / INTERNATIONAL PROGRAMS
http://www.census.gov/ftp/pub/ipc/www/idbacc.html
The U.S. Census Bureau (BuCen) has an International Programs Center and has done much work in the area of Population & Security, which can be accessed through its International Database (IDB).

United States Central Intelligence Agency (CIA)
http://www.odci.gov/cia
The CIA's homepage provides links to Agency publications, press releases, official statements, and other intelligence community Web sites.

United States Department of Agriculture / Foreign Agricultural Service (FAS)
http://www.fas.usda.gov
This site contains documents, press releases and general information on the FAS, an agency of the U.S. Department of Agriculture that represents the diverse interests of U.S. farmers and the food and agricultural sector abroad.

United States Department of Defense / DefenseLINK
http://www.dtic.dla.mil/defenselink/
DefenseLINK, an information service for DoD, provides links to all branches of the armed forces.

United States Department of Defense / Environmental Restoration
http://www.dtic.dla.mil/envirodod/
The DoD Environmental Restoration Electronic Bulletin Board provides information for small and minority businesses interested in the DoD's environmental cleanup mission.

United States Department of Defense / Environmental Security
http://www.acq.osd.mil/ens/
The Office of the Deputy Under Secretary of Defense for Environmental Security page includes a mission statement and links to government officials, projects, and divisions within DoD (ES).

United States Department of Defense / Navy Environmental Program
http://enviro.navy.mil
This page for the Department of the Navy Environmental Program includes a search capability, specific program reviews and links to related sites.

United States Department of Energy (DOE)
http://www.home.doe.gov/
This DOE page contains links to departmental programs, personnel, and informational services.

United States Department of State
Bureau of Oceans and International Environmental and Scientific Affairs
http://www.state.gov/global/oes
This site is the main source for information about the State Department's foreign policy development and implementation in global environment, science, and technology issues. It also features the State Department's April 1997 "Environmental Diplomacy" report.

United States Environmental Protection Agency (EPA)
http://www.epa.gov
This website details EPA's research programs and activities, and contains EPA's National Publications Catalog as well as full-text publications. The site also describes environmental laws and regulations.

United States Geological Survey (USGS)
http://info.er.usgs.gov
The USGS site provides information on the global environmental system and sustainability.

United States Global Change Research Program (USGCRP)
http://www.usgcrp.gov
USGCRP's site provides access to research and data on global climate change, information on USGCRP seminar series and publications, and a detailed description of the U.S. National Assessment of the Potential Consequences of Climate Variability and Change.

UNITED STATES GOVERNMENT PRINTING OFFICE
http://www.access.gpo.gov/su_docs/
This site provides access to the Federal Register, the Congressional Record and additional government documents.

UNITED STATES INFORMATION AGENCY
http://www.usia.gov/topics/environ/
This page includes over 30 documents about environmental issues.

WHITE HOUSE OFFICE OF SCIENCE AND TECHNOLOGY POLICY
http://www.whitehouse.gov/White_House/EOP/OSTP/html/OSTP.html
To achieve global stability, OSTP seeks to apply the tools of science and technology to the prevention of stresses that lead to conflict, such as unchecked population growth, food scarcity, environmental degradation, natural disasters, and infectious diseases.

International and Regional Organizations

EUROPEAN ENVIRONMENTAL AGENCY (EEA)
http://www.eea.dk
The EEA site provides information to policymakers and the public about Europe's environment.

GLOBAL ENVIRONMENTAL FACILITY (GEF)
http://www.worldbank.org/html/gef/geftext.htm
The GEF home page provides multi-lingual links to its publications and bulletins.

NORTH ATLANTIC TREATY ORGANIZATION / SCIENCE PROGRAMME (NATO)
http://www.nato.int/science/scope/es.htm
The NATO Science Programme website contains information on its projects related to environment and security issues, including the reclamation of contaminated military sites, regional environmental problems, and natural and man-made disasters.

NORTH ATLANTIC TREATY ORGANIZATION / CCMS ENVIRONMENTAL CLEARINGHOUSE SYSTEM
http://www.nato.int/ccms/chs0.html
The NATO CCMS Environmental Clearinghouse System (ECHS) website serves as a link to environmental data, reports, and studies. The site serves as a tool for the multiple Committee on the Challenges of the Modern Society (CCMS) pilot studies and participating nations to require, organize, retrieve, and disseminate environmental information of common interest.

UNITED NATIONS (UN)
http://www.un.org
This website contains a searchable database, online publications, UN documents, webcasts, and news.

UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)
http://www.undp.org
This site includes information on UNDP's sustainable human development activities and publications.

UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)
http://www.unep.ch
The home page for UNEP provides links to publications, convention reports, and access to the UNEP database.

UNITED NATIONS INTERNATIONAL CONFERENCE ON POPULATION AND DEVELOPMENT (ICPD)
http://www.iisd.ca/linkages/cairo.html
This 1994 conference brought together world leaders, representatives of nongovernmental organizations, and United Nations agencies to agree on a program of action. This website lists the historical background, recommendations and publications of the conference.

WORLD BANK
http://www.worldbank.org
This site contains information on the World Bank's various projects, including its projects on environment, human development, infrastructure, and urban development. The site also includes an on-line catalog of World Bank publications.

Institutes and Non-Governmental Organizations

American Association for the Advancement of Science
http://www.fsk.ethz.ch/isn/subjects/aaas.htm
This home page highlights the Project on Environment, Population and Security, headed by Professor Thomas Homer-Dixon. It provides instructions for joining the Project's Document Distribution System and Discussion Forum. The multi-year project seeks to provide analysts, scholars, and policymakers with policy-relevant scholarly analyses of linkages among renewable resource scarcity, population growth, migration, and violent conflict.

American Association for the Advancement of Science (AAAS) / Population and Sustainable Development Program (PDS)
http://www.aaas.org/internationalpsd/psd.htm
This site provides information on population, sustainable development, AAAS programs, links to related websites, and highlights relationships among scientific research, human development, and interactions with the environment.

Aspen Institute
http://www.aspeninst.org
The Aspen Institute website includes information on its policy and seminar programs as well as a listing of publications related to the environment.

The Bellona Foundation
http://www.grida.no/ngo/bellona
This web page features this Norwegian environmental group's factsheets and the latest news on the state of the environment in Eastern Europe and Russia.

Carnegie Endowment for International Peace, Managing Global Issues Project
http://www.ceip.org
This website includes a library of over 8,500 volumes and more than 200 periodicals. The site also includes general information about the Carnegie Endowment and detailed information on its Managing Global Issues Project, which examines several environmental issues including biodiversity, transboundary air pollution, trade in endangered species, and hazardous waste transport.

Center for Bioregional Conflict Resolution
http://www.concurinc.com/CONCUR07.html
The Center's site includes information on its various projects and programs, including: Strengthening the Theory and Practice of Environmental Conflict Resolution; Leadership Training to Improve Environmental Decision Making; and Developing Effective Strategies for Integrating Cultural Preservation with Environmental Protection. The site also includes publications and information about professional training programs.

The Center for Economic Conversion (CEC)
http://www.conversion.org
The CEC page details this non-profit corporation's attempts to build a sustainable peace-oriented economy. The page includes descriptions of local, state, and national efforts.

Center for International Environmental Law (CIEL)
http://igc.apc.org/ciel
The CIEL site offers a variety of resources about environmental issues including trade, biodiversity, international financial institutions, global commons law, and publications.

Center for Security Studies and Conflict Research of the Swiss Federal Institute of Technology and Swiss Peace Foundation
http://www.fsk.ethz.ch/encop/
This home page provides an overview of the Environment and Conflicts Project (ENCOP) and includes a complete listing of the Project's papers and links to other sources on the Internet.

COMMITTEE FOR THE NATIONAL INSTITUTE FOR THE ENVIRONMENT (CNIE)
http://www.cnie.org/
The CNIE website maintains a library of Congressional Research Service Reports on Natural Resources and Environmental Quality, a Population and Environment database, a directory of Environmental Education Programs and Resources, a biodiversity database, and notices of environmental science conferences and meetings.

CONSORTIUM FOR INTERNATIONAL EARTH SCIENCE INFORMATION NETWORK (CIESIN)
http://www.ciesin.org
CIESIN has recently announced the beta test of www.mail@ciesin.org, a service that provides an e-mail-only gateway to environmental treaty information on the World Wide Web. The service uses the Agora software developed by Arthur Secret of CERN and the W3 Consortium.

DEMOGRAPHIC, ENVIRONMENTAL, AND SECURITY ISSUES PROJECT (DISEP)
http://www.igc.apc.org/desip
Ron Bleier maintains a database of on-going conflicts, with special attention to environmental and population aspects of those conflicts.

ENVIRONMENTAL DEFENSE FUND (EDF)
http://www.edf.org/
This site includes a library of EDF's publications and discussion forums on issues such as the environment and health, global warming, and endangered species. EDF's site also features a bi-monthly newsletter.

EVIDENCE BASED RESEARCH (EBR)
http://www.ebrinc.com
The EBR web page features selected projects and publications. The site also includes detailed information about EBR's current for profit work on environment and security.

FEDERATION OF AMERICAN SCIENTISTS (FAS)
http://www.fas.org
The FAS website features current programs relating to emerging diseases, biological weapons, and nuclear nonproliferation.

THE GLOBAL ENVIRONMENTAL CHANGE AND HUMAN SECURITY PROJECT (GECHS)
http://office.geog.uvic.ca/gechs/main.html
The Global Environmental Change and Human Security project (GECHS) is the result of extensive discussions, research, and policy initiatives over the past few years in the broad area of "environmental security." The site provides detailed information on the GECHS project to all interested persons, and provides access to research reports, briefing documents and other publications arising from GECHS activities.

GLOBAL NETWORK OF ENVIRONMENTAL TECHNOLOGY (GNET)
http://www.gnet.org
The GNET site provides access to the latest U.S. government initiatives on the environment.

GLOBAL WATER PARTNERSHIP (GWP)
http://www.gwp.sida.se/
This site details the work and objectives of the GWP. The site contains news reports, a library of GWP's publications, and a calendar of events.

GREEN CROSS INTERNATIONAL
http://www.gci.ch
This web site profiles Green Cross International's work, including its programs on the Earth Charter Initiative, Environmental Legacy of Wars, Water and Desertification, Energy and Resource Efficiency, Environmental Education, and Information Dissemination. This site also includes information on programs and events and a library of discussion papers and books.

FOREIGN POLICY IN FOCUS
http://www.foreignpolicy-infocus.org
Foreign Policy In Focus is a series of policy briefs designed to provide the latest research and analysis on timely foreign policy subjects. It is a joint project of the Interhemispheric Resource Center (IRC) and the Institute for Policy Studies (IPS).

Family Health International
http://www.fhi.org/en/fp/fpother/caicons/index.html
Family Health International has a web page covering the International Conference on Population and Development. This page is a comprehensive guide to literature by NGOs on the success/failure of the Cairo agreements produced by the Population Reference Bureau and the Population Council for the Task Force on Communicating Research Findings, U.S. NGOs in Support of the Cairo Consensus.

Future Harvest
http://www.futureharvest.org
This site offers information on global issues, a news section, profiles of world-renowned supporters of Future Harvest and its issues, lists of basic source materials and links, and updates via a sign-up electronic mailing list.

Institute for Global Communications (IGC)
http://www.igc.org/
EcoNet, one of a number of IGC networks, serves individuals and organizations working toward peace and environmental protection. This EcoNet organizations page provides an extensive list of environmental organizations conducting work relevant to environmental change and security issues.

Institute for Policy Studies (IPS)
http://www.ips-dc.org/
IPS has served as an independent center for progressive research and education for more than three decades.

Interhemispheric Resource Center (IRC)
http://www.zianet.com/irc1/
IRC, founded in 1979, produces books, policy reports, and periodicals on U.S. foreign policy, global affairs, and U.S.-Mexican borderlands issues.

International Institute for Sustainable Development (IISD)
http://iisd1.iisd.ca/
This Canadian institute seeks to integrate sustainable development into Canadian and international policy decision-making. Its page provides links to the Institute's many projects including the Earth Negotiations Bulletin. It also links to a list of selected book and article resources for environment and security at the extension http://iisd1.iisd.ca/ic/info/ss9502.htm.

International Peace Research Institute, Oslo
http://www.prio.no
PRIO is an independent, international institution. The PRIO home page contains a list of their publications. PRIO publishes a book series and two international journals in cooperation with SAGE Publications in London, as well as a report series and a newsletter. The page also includes the PRIO Library, which provides a core stock of relevant material for peace research, democracy, security policy, disarmament, and environmental issues.

International Relations and Security Network (ISN)
http://www.isn.ethz.ch
The ISN maintains a page listing links to sites on the Web dealing with environmental conflicts and environmental security. The direct link is http://www.isn.ethz.ch/linkslib/isn.cfm?GC=205&from=subjects.

The Nautilus Institute
http://www.nautilus.org
The home page for Nautilus provides extensive information on its Asia Pacific Regional Environmental Network (APRENet) and its project on Energy, Security and Environment in Northeast Asia. The site has links to its other projects and related Internet resources.

Pacific Institute for Studies in Development, Environment, and Security
http://www.pacinst.org/pacinst
The Pacific Institute provides research and policy analysis in the areas of environment, sustainable development, and international security.

Pathfinder International
http://www.pathfind.org
This site describes Pathfinder's on-the-ground research projects and includes a description of all active programs. It is designed to address population, environment, and security issues.

Planet Ark World Environmental News
http://www.planetark.org/news
In association with Reuters news agency, this organization runs a daily environmental news service.

Population Action International
http://www.ppulationaction.org
This site details population program research at PAI. This research ranges from reproductive health, to funding, to the status of women. The site also maintains a legislative update about the politics of population assistance. In addition to a catalog of PAI publications, the site also contains general facts and figures on population.

Populational Council
http://www.popcouncil.org/
This site offers information on current projects and programs, including research on Gender, Family, and Development; Safe Motherhood; and Reproductive Health Products. The site also includes brief synopses of the Population Council's journals, books, and issue papers.

"Today, the greatest threats facing any nation's security may not be military threats. Increasingly, they are complex issues related to the environment such as: population growth, water scarcity, pollution, and economic stability. "

http://www.cdi.org/adm/EnviroShow/index.htm

Population Reference Bureau (PRB)
http://www.prb.org/prb
Population Reference Bureau, founded in 1929, provides timely, objective information on U.S. and international population trends. This web site describes their numerous publications.

Resources for the Future (RFF)
http://www.rff.org
RFF's website features brief research papers on multiple topics including climate change, energy security, military base cleanup, and trends in disease.

Rocky Mountain Institute (RMI)
http://www.rmi.org
The RMI site features information on its latest research including topics such as energy, green development, climate change, water, and security. The site also includes RMI's newsletter and publications.

Royal Institute of Technology—Stockholm, Sweden
http://www.lib.kth.se/~lg/envsite.htm
This home page, Environmental Sites on the Internet, provides a large environmental subject index with links to other home pages and gopher menus.

Sierra Club
http://www.sierraclub.org/policy/521.html
This Sierra Club page highlights its adopted policy position on Environmental Security. The policy statement begins, "Investments in environmental security should begin to replace new military expenditures...."

Socioeconomic Data and Applications Center (SEDAC)
http://sedac.ciesin.org
This site contains information on SEDAC's various reports, including the projects on Integrated Population, Land Use and Emissions Data, Environmental Treaties and Resource Indicators, and the Stratospheric Ozone and Human Health. The site also includes interactive applications to search for socioeconomic and environmental data.

Stockholm International Peace Research Institute (SIPRI)
http://www.sipri.se/
SIPRI's page provides listings of staff, projects, conferences, and publications. The Institute's research commonly considers environmental factors in discussions of security and disarmament.

World Resources Institute (WRI)
http://www.wri.org
This website offers publications and detailed information on biodiversity and its relationship to human health, the environment, and conflict. This page also offers a list of links to other WRI sites and news releases.

Foundations

Rockefeller Brothers Fund (RBF)
http://www.rbf.org
This site features RBF's initiatives on Sustainable Resource Use, World Security, and Global Interdependence. The site includes publications on global stewardship, redefining security and climate change.

Rockefeller Foundation
http://www.rockfound.org
The Rockefeller Foundation is a grant-making and research institution, which is organized around nine core areas: African Initiatives, Agricultural Sciences, Arts and Humanities, Health Sciences, Equal Opportunity/School Reform, Global Environment, and Population Sciences.

W. Alton Jones Foundation
http://www.wajones.org/wajones
This private foundation funds projects related to environment and security. Its web page provides information on the foundation's goals, grants, staff, and currently-funded projects.

Academic Programs

Cambridge University
http://www.gsp.cam.ac.uk/
The Global Security Programme page provides information on publications, staff, and activities of this academic institute. Programme research attempts to bring together traditional environment, development and international relations studies to better understand the post-Cold War period.

Carleton University, Ottawa, Environmental Security Studies
http://www.carleton.ca/polisci/env.html
This page provides specific documents related to environmental security. In addition, the page provides academic, environmental organizations, government, and NGO links pertaining to environmental security.

Colorado State University / Center for Ecological Management of Military Lands (CEMML)
http://www.cemml.colostate.edu
This site provides information on CEMML, a research and service unit within the Department of Forest Sciences in the College of Natural Resources at Colorado State University. The site features information on current research and publications, workshops, and training.

Cornell Program on Environmental Management
http://www.cfe.cornell.edu/CPECM/cpecmhome.html
This Cornell University page provides an overview of its program designed to foster cooperation among private and public institutions as a means to resolve environmental conflicts. The page includes announcements of future conferences.

JOHNS HOPKINS UNIVERSITY / CENTER FOR COMMUNICATION PROGRAMS
http://www.jhuccp.org
This site offers information on the Center's work towards population control, disease containment, and other issues that can create conflict due to environmental stress. This website also offers searchable databases, links to related sites, publications, and research.

LAVAL UNIVERSITY/INTERNET FORUM ON FOOD SECURITY
http://fao50.fsaa.ulaval.ca/
This Forum has been set up to discuss poverty, demography, health and nutrition, food availability, food habits, education, international trade and geopolitics, macroeconomic policies, the management of natural resources and the environment, and the management of markets. The site is available in English, French, and Spanish.

UNIVERSITY OF CALIFORNIA INSTITUTE OF GLOBAL CONFLICT AND COOPERATION (IGCC)
http://www-igcc.ucsd.edu/IGCC/igccmenu.html
The IGCC page includes information on the institute, IGCC fellowships, grants and ongoing research, and campus programs. The page also provides the full text of all IGCC publications.

UNIVERSITY OF IOWA / CENTER FOR GLOBAL AND REGIONAL ENVIRONMENTAL RESEARCH (CGRER)
http://cgrer.uiowa.edu/index.html
This website highlights CGRER's interdisciplinary research efforts that focus on aspects of global environmental change, including the regional effects on natural ecosystems, environments, and resources, and on human health, culture and social systems.

UNIVERSITY OF MARYLAND / HARRISON PROGRAM ON THE FUTURE GLOBAL AGENDA
http://www.bsos.umd.edu/harrison
This site includes working papers on environmental security, conflict, disease, and population. It also includes a description of the Program's active research agenda on environmental security and microsecurity.

UNIVERSITY OF MICHIGAN / POPULATION STUDIES CENTER
http://www.psc.lsa.umich.edu
This is a site for one of the major population research centers in the country. This site features the Center's research programs which focus on the following demographic issues: fertility and family planning; health and sexual behavior; marriage, family, children, and links between generations; inequality; social mobility and race and ethnicity; migration and residential segregation; and aging and disability.

UNIVERSITY OF TORONTO / PEACE AND CONFLICT STUDIES
http://www.library.utoronto.ca/www/pcs/pcs.htm
This home page for the University of Toronto's Peace and Conflict Studies Program contains links to its Project on Environment, Population and Security; Project on Environmental Scarcities, State Capacity and Civil Violence; and Environmental Security Library & Database.

YALE CENTER FOR ENVIRONMENTAL LAW AND POLICY
http://pantheon.yale.edu/~epcenter
This site features the Center's strong focus on trade and environment, forestry, and the politics of conservation.

Bibliographic Guide to the Literature

The Guide includes a wide range of publications, organized by theme, which relate to environment, population, and security. This listing is an update to the ECSP bibliography printed in the ECSP Report *Issue 4 1998. You can find the complete listing on-line at http://ecsp.si.edu.*

The Environmental Change and Security Project will continue to publish updates to this bibliography; we welcome suggestions regarding citations to include. Entries are formatted according to Kate L. Turabian's Manual for Writers of Term Papers, Theses, and Dissertations.

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Baumgartl, Bernd. "'Only' a Guideline: The Environmental Action Program for Central and Eastern Europe." *Environmental Impact Assessment Review* 14:2/3 (1994): 147-156.

Beck, U. *Ecological Politics in an Age of Risk*. Cambridge, U.K.: Polity Press, 1995.

Bedeski, Robert E. "Integration of Non-Traditional Security Issues: a Preliminary Application to South Korea," In *Environment and Security: Discourses and Practices*, ed. Miriam R. Lowi and Brian R. Shaw. Houndmills, U.K.: Macmillan Press, 1999 (forthcoming).

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Briggs, Chad M. "Forgotten Origins: Nuclear Weapons and Environmental Security." Paper presented at the Annual Meeting of the International Studies Association, Washington, DC, February 1999.

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