

Foreword

by Geoffrey D. Dabelko, Editor

Connections among the environment, population, and security pose complex and tangible challenges for the farmer in the Sahel, the investment banker in Tokyo, the miner in the Kazbass and the rubber tapper in the Amazon. And they present challenges for citizens of the United States. Specific problems are often locally unique but can also be globally common. The environment-population-security nexus poses both day-to-day and long-term struggles for survival. Success in addressing the challenges raised by these linkages depends not only on where and how the environmental or demographic problems occur, but also on political, economic, and social contexts. And what political institutions are most appropriate and effective in meeting these challenges?

This complexity is central to the *ECSP Report* and the activities of the Environmental Change and Security Project. The Project is now in its fourth year of facilitating dialogue and information exchange. This journal is designed to be a desk reference for practitioners, a research resource for scholars, and a teaching tool for students.

This fourth issue of the *ECSP Report* sets out to address these goals with a discussion of the population-environment-security connections through migration, the evolution of U.S. population policy, two regional cases, and another installment in the debate about the environment as a cause of conflict. In the first of two articles on demographic issues, geographer Steve Lonergan from the University of Victoria revisits the complex connections between environmental change and population displacement. He argues for less rhetoric about “environmental refugees” and closer examination of complicated empirical relationships. Craig Lasher of Population Action International traces U.S. population policy from Bucharest through Mexico City to Cairo and evaluates efforts to implement the Cairo legacy within the U.S. government.

Swiss peace researcher Günther Baechler synthesizes the results of his co-directed Environmental Conflicts Project in which an international team of researchers conducted 40 case studies on potential links between environmental change and conflict. Two regional features provide insights on specific cases with global causes and consequences: nuclear pollution threats in Northwest Russia and deforestation in Southeast Asia. Thomas Jandl of the Norwegian-based Bellona Foundation recounts the ongoing trial of Russian environmentalist Alexandr Nikitin to describe the challenges of domestic and international environmental NGO activity in Russia. Conservation International’s Kirk Talbott and the Wilson Center’s Melissa Brown explicate the destructive “peace” in Cambodia and Burma as political factions share the common interest of forest resource exploitation while fueling their capacity for political and military conflict.

Readers may also turn to the Project’s new Internet website to find the full text of all ECSP publications including past issues of the *ECSP Report* and the *China Environment Series*. Through this website and its on-line discussion group, a wider group of scholars, practitioners, and interested individuals can participate in the debates surrounding these critical issues. In particular, we hope international colleagues and students will increasingly utilize this forum to learn more about environment, population, and security connections from a largely U.S. perspective. Through dialogue, we in the United States may in turn better understand their complimentary or contrary perspectives on these issues.

This issue of the *ECSP Report* introduces a number of new features in the continued effort to improve the journal for a variety of audiences. The Update section features new entries on government, academic, and NGOs. We list previously covered organizations at the end of each section and refer readers to the Project’s new Internet site for complete past listings <<http://ecsp.si.edu>>. The Bibliographic Guide to the Literature and the Internet Resources sections are complete compilations from past issues. In 1999, Issue 5 will return to the update format for these sections.

And finally, two major changes accompany the publication of this issue of the *ECSP Report*. Beginning in August of 1998, the Woodrow Wilson Center and the Project will reside in a new home at 1 Woodrow Wilson Plaza in the Ronald Reagan Building and International Trade Center in Washington, D.C. This move will allow the Project to expand its physical space to match the gains in staff and programming achieved over the past four years.

Since the last issue of the *ECSP Report*, the Project has also experienced a leadership change. In August 1997, founding director P.J. Simmons stepped down as director of the Project and became co-chair of our Advisory Committee. It was Simmons’s vision and energy, which he now applies at the Carnegie Endowment for International Peace, that created this ongoing forum for policy-relevant exchange and scholarly debate.

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The Role of Environmental Degradation in Population Displacement¹

by Steve Lonergan

INTRODUCTION

THE UNHCR IN THE 1993 *STATE OF THE WORLD'S REFUGEES*, IDENTIFIED FOUR ROOT CAUSES OF REFUGEE FLOWS. THESE were: political instability; economic tensions; ethnic conflict; and *environmental degradation*. The claim that environmental degradation was a root cause of refugee flows was a direct response to a growing number of articles positing a link between environmental degradation and population movement, and a recognition that the numbers of displaced persons internationally was much larger than indicated by the statistics on refugee flows.

According to many writers, the number of people who have been displaced by environmental degradation is immense. Jacobson (1988) notes that, "environmental refugees have become the single largest class of displaced persons in the world." Homer-Dixon (1991) further notes that environmental degradation is likely to produce "waves of environmental refugees that spill across borders with destabilizing effects" on domestic order and international relations. Speaking of displaced persons unaccounted for in official refugee figures, the Executive Director of UNEP at the time, Mustafa Tolba (1985), stated that "these people are the millions fleeing the droughts of northern Africa, the victims of Bhopal and the thousands made homeless by the Mexico earthquake. They are environmental refugees."

Estimates of the number of environmental refugees start at 10 million (compared to 17 million official refugees); more than half of these are believed to be in Sub-Saharan Africa (Jacobson, 1988; Trolldalen, et. al., 1992; Westing, 1992). Because governments generally take little official account of this unconventional category, Myers (1992) estimates that the numbers may be as high as 25 million. It is also claimed that the numbers are increasing rapidly. The Intergovernmental Panel on Climate Change (IPCC, 1990) noted that the greatest effect of climate change may be on human migration as millions of people will be displaced due to shoreline erosion, coastal flooding and agricultural disruption. Following from this, Myers (1992) projected environmental refugees in a greenhouse-affected world (in yr. 2050) at 150 million persons. Westing (1992) further documented displaced persons throughout the world in 1990 (using UN data), including officially recognized refugees (16.7 million), unrecognized, cross-border "refugees" (3.5 million), and unrecognized, internal "refugees" (21.3 million). He sums these into a category of "total national refugees" with 41.5 million persons. In 1986, the total was only 26.4 million, and he speculates that the growth is due to the addition of "environmental refugees."

The consideration for people who may have been displaced by environmental degradation has reached far beyond a humanitarian concern for a disenfranchised population; in some quarters, it is being considered a "threat to security." Betterton (1992, as cited in Honebrink, 1993) noted that the U.S. military may be needed "to guard the border with Mexico, as it is expected that problems may result from environmental refugees fleeing the Third World." Indeed, the anti-immigration literature in the United States and Europe often claims that immigration is a cause of environmental degradation, thereby bringing the links full circle (see, for example, Beck, 1996; Williamson, 1996; and the literature distributed by FAIR, the Federation of Americans for Immigration Reform). Quotes like the ones below are becoming increasingly prevalent in the popular literature.

It is not antihuman or antisocial to say that too many people can be a problem.... People pollute, and too many people living in an area can degrade that area irrevocably. Immigration at high levels exacerbates our resource and environmental problems. It will leave a poorer, more crowded, more divided country for our children (Lamm and Imhoff, 1985).

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...Immigration has been a substantial cause of the negative environmental news that must be mixed among all the good.... Thus, to what extent environmental problems can be blamed on U.S. population growth, the preponderance of that blame rests on U.S. immigration policy. Only a reduction in numbers will deal with the environmental problem. (Beck, 1996).

While some may feel that such claims are little more than disguised racism—a “greening of hate” might be a better term—it is important to accept that the issue of environmental degradation and population displacement has reached a level of “high politics” discourse. This is true whether viewing environmental degradation as a “cause” or an “effect.”

The purpose of this paper is to clarify the myriad of issues surrounding the linkage between environmental degradation and population displacement. The presentation on the following pages adopts a problem-based approach, attempting to answer crucial questions regarding, for example, the evidence of a link and the potential policy implications of the existing research. In addition, the concern is only with environment as a possible *cause of, or contributor to*, population movement, as opposed to the potential environmental repercussions associated with population movement. The latter concern, while very much in the public debate, has been addressed elsewhere (see Li and Loneragan, forthcoming).

THE ROLE OF ENVIRONMENT IN MIGRATION MOVEMENTS

Migration has been described as “an extremely varied and complex manifestation and component of equally complex economic, social, cultural, demographic, and political processes operating at the local, regional, national, and international levels” (Castles and Miller, 1993). As complex as migration is, the environment is equally so. And it is similarly problematic to remove environmental processes from the social, economic, political and institutional structures of which they are a part. Therefore, drawing a linear, deterministic relationship between environmental degradation and migration (and security) is not only inappropriate, but impossible, despite the claims of some authors. Nevertheless, we can try to identify certain cases where environment plays an important role as a *contributor* to population movement and attempt to design interventions to minimize the negative impacts associated with such cases.

1. How many refugees and migrants are there?

This is an almost impossible question to answer. The International Organization of Migration estimated that there were over 80 million migrants in 1990 (IOM,

1990). Fifteen million of these were refugees and asylum seekers. By 1992, estimates put the total number of migrants at over 100 million, of whom 20 million were refugees and asylum seekers (Castles and Miller, 1993). However, UNHCR (1995) acknowledges that collecting accurate statistical data on refugees and asylum-seekers is “one of the most problematic issues” confronting the agency, and these figures, indeed all figures cited in this article, must be treated with suspicion.

Nevertheless, rough estimates of the total number of displaced persons are often presented with abandon, either for shock value or for political reasons. Myers (1995) states that China has “120 million internal migrants, and at least ...six million deserve to be regarded as environmental refugees.” He goes on to say that there are now at least 25 million “environmental refugees” (Myers, 1995: 15). The International Organization for Migration (IOM, 1992) goes farther, noting that by the turn of the century there may be *one billion* persons who have been “environmentally displaced from their original habitat.” Such claims lead to much confusion and fear on the part of many, and provide ample “evidence” for those wishing to promote anti-immigration rhetoric in the North.

2. Even if we can not accurately estimate the number of migrants, what have traditionally been presented as the causes of migration flows?

The literature on migration is voluminous, and there will be no attempt to repeat this information here. Theories on the causes of migration flows can generally be categorized into two broad perspectives. The first is a “neo-classical economics equilibrium approach,” which suggests that population movement is a “natural” response to interregional differences in social and economic opportunities, and people generally move from where labour is plentiful and capital is scarce to labour-deficit and capital-rich areas. Thus, the level of development in various regions of the globe is seen as determining the magnitude and direction of migratory streams. Extensions to the neo-classical approach explain population movements based on a combination of “push” and “pull” factors; existing conditions at the place of origin may motivate an individual to leave, or qualities of the area of destination may attract a potential migrant. Demographic pressures, political instability, lack of economic opportunities and, more recently, environmental degradation have been posed as possible “push” factors.

The second approach criticizes the neo-classical economic perspective for placing too much emphasis on the free choice of individuals, and for neglecting the macro-structural forces which lie at the base of the regional disparities to which people respond. Population movements are not unique or isolated events, but

By the turn of the century there may be one billion persons who have been “environmentally displaced from their original habitat.”

are related to the international power structure and institutional organization. According to this “structuralist” approach, the explanation for population movements lies in the deeper, underlying forces which structure the unequal distribution of opportunities between regions. Population movements, then, are a response to broader structural forces in society, in particular those associated with the uneven penetration of capitalism which has created substantial spatial inequalities.

The difference between neo-classical economic theories of population movements and the structuralist approach influences all aspects of any discussion regarding the issue. Not only do the theories offer opposing views of the causes of refugee movements, but they also imply very different outcomes. The neo-classical approach, arguing that population displacements are natural occurrences, suggests that they are positive events and that policy development should reflect and reinforce the beneficial aspects of these movements. The structuralist approach, however, emphasizes that population movements are a response to unnatural imbalances in power and opportunities. Consequently, the negative aspects of population displacements are a function of inequities in development, and policy should be developed to address these imbalances and attempt to stem what must be viewed as a consequence of the inequitable distribution of resources in society.

3. What role does the environment play as a contributor to population movement?

a) The Advocates

Although there is growing awareness of, and interest in, the relationship between environmental change and population movement, the traditional literature on migration has largely ignored the connection. In their report to the Trilateral Commission (*International Migration: Challenges in a New Era*), Meissner et al. (1993) never once mention environment or resources. Rogers (1992) in his discussion on migration presents four key indicators of “migration potential:”

- population growth;
- economic restructuring;
- increasing economic disparities; and
- increased refugee flows.

Again, environment is not mentioned. Other recent reviews on the causes of migration which fail to

include environmental degradation or resource depletion as factors include Appleyard, 1991; and Massey, et al, 1993). This stands in stark contrast to the statements in *The State of the World's Refugees* (UNHCR, 1993), which clearly identify environmental degradation as a root cause of population displacement, as mentioned above (it is worth noting, however, that the 1995 volume by UNHCR does not make a similar claim).

Countering the traditional perspective on migration is a growing literature which claims that traditional theories fail to recognize the true extent and complexity of migratory responses to environmental degradation (cf. Hall and Hanson, 1992; Kavanagh and Lonergan, 1992; Fornos, 1993; Stoett, 1993; Lee, 1996; Suhrke, 1992, 1996; Vlachos, 1996). Most attention has focused on the plight of “ecological refugees” or “environmental refugees” (El-Hinnawi, 1985; UNHCR, 1993). While the World Commission on Environment and Development (WCED) identified environmentally-induced population displacement as a “recent phenomenon” (WCED, 1987), there is little doubt that throughout history people have had to move from their land because it has become degraded through natural disasters, warfare or over-exploitation. Intuitively, it makes sense that environmental change may affect socio-economic conditions which, in turn, could lead to out-migration. Indeed, recurrent droughts and extreme flooding have uprooted millions of people, although whether environmental catastrophes were the root cause of such movement is unclear.

The concern that environmental degradation will produce “waves of refugees,” however, is more recent, based largely on the writings of El-Hinnawi (1985), Jacobson (1988) and Myers (1993; 1995). Suhrke (1992) labels this group the “maximalists.” Supporting their arguments is the fact that environmental disasters such as floods, droughts and earthquakes are displacing ever larger numbers of people, not necessarily because the severity of these events is becoming greater,² but because population density, especially in regions which are prone to disaster, is increasing rapidly. Land and resource scarcity elsewhere may also be a strong contributor to these increases in density in vulnerable areas.

Since its first official use in 1985 by El-Hinnawi in his United Nations Environment Programme (UNEP) report, the phrase “environmental refugee” has appeared with increasing frequency in the literature on environment and development. “Environmental refugees” are defined by El-Hinnawi as:

...those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life (El-Hinnawi, 1985, p.4).

Jacobson (1988) notes that “environmental refugees have become the single largest class of displaced persons in the world,” with an estimated 10 million environmentally-displaced persons in the late 1980s, compared with 17 million official political refugees displaced by warfare, strife and persecution (see Table 1). And the conclusion by the UNHCR is unequivocal: “There are, nevertheless, clear links between environmental degradation and refugee flows” (UNHCR, 1993, p. 18). While the UNHCR claim may be true, it does not necessarily follow that environmental degradation has been the cause of a majority of “refugee” flows.

b) *The Contrarians*

Despite these claims, it remains that there has been little substantive research directed at the question of the role of environmental change in population movement. Considerable confusion has arisen over definitions, the size of these “refugee” flows and whether one, indeed, can isolate environmental causes from the complex set of variables affecting population movement. While there is a sense that drastic environmental change may affect the structural forces which, in turn, link to population movement, the environment is seen as little more than a “contextual factor” which is taken into consideration in decision-making (Suhrke, 1992, labels this perspective the “minimalist”). The arguments presented by the “maximalists” (it is claimed) are ill-founded, and based on anecdotal information.

Table 1. Estimates of “Environmental Refugees”

For example, Myers (1993) estimates that that for every person who moves across an international boundary to escape environmental pressures there may

be two or three similarly displaced people who move within their territory of nationhood—so-called “internally displaced persons.” Myers adds these two categories of population movement together and estimates the total number of “environmentally displaced” persons to be as high as 25 million (he further predicts, as a worst case scenario, that this figure may increase to 150 million by the year 2050 as a result of the “greenhouse effect” and rising sea-levels). Westing (1992) speculates that the growth in the world’s refugee and internally displaced population from 26.4 million in 1986 to 41.5 million in 1990 may have been attributable to environmental degradation, which has forced people from their land.

The writings noted above which have popularized the phenomenon of “environmental refugees” are problematic for reasons which are both definitional and substantive. First, the words “estimate” and “speculate” above are used advisedly: in most cases these figures are little more than educated guesswork—there is little empirical evidence with which to authenticate these authors’ claims (Mougeot, 1992).

Second, there is too often an uncritical acceptance of a direct causal link between environmental degradation and population displacement. Implicit in these writings is the belief that environmental degradation—as a possible cause of population displacement—can be separated from other social, economic or political causes. It must be recognized that the degradation of the environment is socially and spatially constructed; only through a structural understanding of the environment in the broader political and cultural context of a region or country can one begin to understand the “role” it plays as a factor in population movement.

Third, not only are the definitions offered for environmental refugees ambiguous and inconsistent, the projections of future numbers do not take into consideration adaptation, there is no discussion of the role of public policy—or other factors—in the increase in the numbers of displaced people, and the analyses are, in most cases, quite superficial. Why do people continue to move into Mexico City and Chongqing, China, two of the most polluted places on Earth? Why does severe environmental degradation not generate large out-migration in many cases?

Last, some authors are concerned that there is no legal basis for the definition of “environmental refugee.” Not only does this conflict with the standard definition of refugees which was codified in the 1951 Convention and 1967 Protocol relating to the Status of Refugees, but it may undermine current work towards using broader human rights criteria to determine refugee status (McGregor, 1993).

Despite these criticisms, it is important not to trivialize the potential role environmental change may play in population movement. It is entirely possible that the impact of environmental degradation and re-

source depletion on population movement may be even more important than these authors suggest.

4. What does “environment” mean in the context of migration?

Part of the difficulty in determining what role the “environment” plays as a cause of, or contributor to, population movement is that authors interpret “environment” quite broadly, or keep it ill-defined. El-Hinnawi (1985), for example, notes three categories of “environmental refugees:”

- Those temporarily displaced because of an environmental stress such as an earthquake, or cyclone, and who will likely return to their original habitat;
- Those permanently displaced because of permanent changes to their habitat, such as dams or lakes; and
- Those who are permanently displaced desiring an improved quality of life because their original habitat can no longer provide for their basic needs.

In these three categories, El-Hinnawi has incorporated three very different groups of migrants. In the first case, there is a temporary movement from physical danger; the second category involves development projects where individuals are forced to resettle within a region (and there is a question how many “internal” refugees are generated by these processes); and the third reflects a voluntary movement based on the “push-pull” model noted above.

It is useful to categorize environmental stress, as follows (Loneragan, 1994):

- **Natural Disasters**
Natural disasters include floods, volcanoes and earthquakes. They are usually characterized by a rapid onset, and their impact (destructiveness) is a function of the number of vulnerable people in the region rather than the severity of the disaster, per se. Poor people in developing countries are the most affected because they are the most vulnerable. (Droughts, despite a slower onset, are also included in this category.) Recent earthquakes in Pakistan and flooding in many regions of the world indicates not only the destructiveness of disasters, but their ability to displace large numbers of people.
- **Cumulative Changes or “Slow-Onset Changes”**
Cumulative changes are generally natural processes occurring at a slower rate which interact with—and are advanced by—human activities. The processes include deforestation, land degradation, erosion, salinity, siltation, waterlogging, desertification and climate warming. Human-induced soil degradation is one factor

which directly affects economic sufficiency in rural areas. Water availability is another factor which may affect sustainable livelihoods. Do factors such as water scarcity and human-induced soil degradation in and of themselves cause population displacement? The linkage is much more indirect; in most cases, one or more of rapid population growth, economic decline, inequitable distribution of resources, lack of institutional support and political repression are also present.

- **Accidental Disruptions or Industrial Accidents**
This category includes chemical manufacture and transport and nuclear reactor accidents. The two most obvious examples are the nuclear accident at Chernobyl, in the former USSR in 1986, and the Union Carbide accident in Bhopal, India, in 1987. Between 1986 and 1992, there were over 75 major chemical accidents which killed almost 4000 persons worldwide, injured another 62,000, and displaced over 2 million (UNEP, 1993). Most of these displacements, however, were temporary. In the case of the accident at Bhopal, despite the death of 2,800 people and illnesses to 200,000 more, there was virtually no mass movement of population out of the region.

- **Development Projects**
Development projects which involve forced resettlement include dams and irrigation projects. In India, for example, it has been estimated that over 20 million persons have been uprooted by development projects in the past three decades (Fornos, 1992). The Three Gorges Dam project in China - expected to displace over 1 million persons - and the Sardar Sarovar Dam project in India are the most notable present examples. Rapid urbanization in some regions of the world is also forcing people from their land; conversion of agricultural land to urban uses has long been a phenomenon in the North, and increasingly this is the case in the South as well.

- **Conflict and Warfare**
Environmental degradation is considered by many to be both a cause and effect of armed conflict. Although the evidence of wars being fought over the environment is weak (except, of course, over land), there is an increasing use of the environment as a “weapon” of war or, as Gleick (1990) notes, as a “strategic tool.” One obvious example in this category was the threat by then President Ozal of Turkey to restrict the flow of the Euphrates to Syria and Iraq in order to pressure Syria to discontinue its support of Kurdish separatists in Turkey. Other examples include the purposeful discharge of oil into the Persian Gulf during the Gulf War and the destruction of irrigation systems during conflicts in Somalia. Such activities have similar—and, indeed, more immediate—consequences as the slow-onset changes noted above. But in these cases, it seems

clear that the “environment” is merely a symptom of a larger conflict, and the root cause of any population movement is the conflict itself, and the reasons behind it.

5. *How does one reconcile these different aspects of environment?*

Collectively, it is claimed that these “environmental” changes have resulted in millions of displaced persons. The global deterioration of the environment, continued population growth, and increasing resource scarcity will likely play an increasing role in population movement in the future. But are these factors all “environmental?” And what are the links to migration?

To understand causal relationships, and to better design policy interventions, it is imperative that these five categories be treated separately, and not considered collectively as “environmental degradation.” In some cases, there is minimal impact on population movement, while in others, the role of “environment” is extremely difficult to ascertain. It is clear, for example, that *industrial accidents* have had relatively little impact on migration, with the exception of Chernobyl. Most accidents have resulted in a short-term relocation, but very few (of the more than 2 million cited above) have been displaced permanently from their homes. In the context of other changes, this is a relatively minor concern.

Development projects, while there is little question that they displace large populations, should also be treated separately from other categories. The magnitude of some of the projects is, indeed, daunting, and it has caused the World Bank to avoid any projects which involve major resettlement programs (such as Sardar Sarovar in India). In theory, these projects include a resettlement component, and are unlikely to produce the “waves of environmental refugees” that Homer-Dixon cautions about.

The links between *natural disasters* and population displacement are also problematic. Sadako Ogata, the UN High Commissioner on Refugees, stated in 1992 that the “majority of refugees are found in arid and semi-arid areas of the poorest countries of the world.” Examples of the devastating impact of natural disasters, however, generally come from Bangladesh, Central America, Haiti and South Korea. There is little question that the number of people affected by natural disasters has increased markedly over the past three decades (from 28 million in the 1960s to 64 million in the 1980s). Population growth—particularly in vulnerable areas—and poverty have combined to make larger numbers of people susceptible to environmental disasters. And while the number of homeless is significant, it does not imply that these people migrated to different regions or countries. Indeed, some authors claim

that sudden-onset disasters have resulted more in increased death rather than increased flight (Lee, 1996).

The category of *cumulative, or slow-onset, change*, may well be the most important in terms of being a force in population migration, but it is also the most difficult to measure. Environmental changes such as increased water scarcity and soil degradation may be one factor among many facing a potential migrant. As was noted before, removing environmental processes from the social, economic and political processes in which they are embedded is virtually impossible.

6. *What is the evidence presented for a link between environment and migration?*

Numerous examples are presented to substantiate the link between environmental change and population movement, but the most common are the Sahel in Africa, El Salvador, Haiti, and Bangladesh (El Hinnawi, 1985; Hall and Hanson, 1992; Surhke, 1992; Myers, 1995). There is little doubt that each of these regions/countries has experienced significant environmental stress: droughts, deforestation, soil degradation, and flooding are the most notable. But it is also clear that there are a myriad of other social, economic and institutional processes which are present. Rapid population growth, inequitable land distribution, civil war, extreme poverty, and so on. For example, the Kissinger Report of 1984 attributed the conflict in El Salvador to poverty and inequality; the conflict in the country has resulted in over a million people displaced. But what role did the environment play? Deforestation, exploitation of coastal resources, and the civil war have resulted in substantial environmental damage in the country (Hall and Hanson, 1992). In turn, as Leonard (1989) notes,

If deterioration of these natural resource systems continues, political and social instability will be exacerbated as will economic stagnation and rural poverty. This phenomenon in turn will constrain future economic and social development in all seven countries of greater Central America.

Is environmental degradation a root cause of population movement in El Salvador? It likely played a role, but it was certainly not a root cause.

Another often used example is the Sahel, where droughts and famine have severely impacted people in almost every country in the region. But poverty, marginal agricultural land, institutional constraints, war, inflation and landlessness not only increased the vulnerability of the population to climate variation, but affected the ability of individuals and communities to adapt to a changing environment. The people became more vulnerable, not because of environmental degradation, per se, but because of a host of other social, eco-

nomic and institutional factors.

The same is true in all cases which are used as “evidence” of environmental refugees. The key factor is that certain populations are becoming more vulnerable to environmental change because of other factors; primary among these are poverty and resource inequality, coupled with population growth, institutional constraints, and economic insufficiency.

7. *Is there evidence to the contrary? That environmental change is not linked to migration?*

This question is equally problematic. Direct evidence refuting the claim that environmental factors influence population migration suffers the same difficulties of isolating one factor as all studies. Mougeot (1992) did review World Bank projects to determine if environment was a proximate cause of population movement and found no evidence of a connection, but the scope of this study was very limited. It is clear that there remains a need to better understand the linkages between environmental change and population displacement, to identify regions and populations most vulnerable to environmental degradation, and to lend support to the populations at risk. And despite the fact that evidence provided to identify the link between environmental degradation and population displacement is highly speculative, it is important not to trivialize the role the above factors increasingly may play in population movements. Individuals, families and communities have a remarkable ability to adapt to changing and distressed conditions, and the initial response is to develop stronger safety and coping mechanisms to deal with adverse ecological and economic circumstances. But continued environmental degradation and resource depletion coupled with increasing impoverishment in certain regions is placing a heavy burden on these adaptation responses, and they are becoming powerful impelling factors in population displacement.

8. *What types of environmental problems might there be in the future which could affect migration?*

The Intergovernmental Panel on Climate Change (IPCC) noted in 1990 that the greatest effect of climate change may be on human migration as millions of people will be displaced due to shoreline erosion, coastal flooding and agricultural disruption. Based on this, Myers (1992) projects “environmental refugees” in a greenhouse-affected world (by the middle of the next century) at 150 million persons. While this may be an overstatement, it is true that sea-level rise and coastal flooding will require significant adaptation on the part of some countries, particularly those which have large populations living within a meter of sea-level. The IPCC adds that up to 360,000 km of coast-

line might be affected.

None of the estimates of migration associated with global warming gives any consideration to adaptation mechanisms. While there may be significant implications for some regions, these changes will occur slowly, and by all accounts, most communities and regions will be able to adapt without substantial social or economic cost. Again, the most vulnerable will be the poor, with few options in the face of environmental change.

Water scarcity and poor air quality are other problems which come to mind. But Amman, Jordan—with severe water scarcity—and Mexico City—with the world’s worst levels of air pollution—are both growing very rapidly from in-migration. Indeed, in some instances, it is easier to find cases of people moving to regions which have suffered environmental degradation than moving away from those regions.

Likely the greatest impact on people’s decision to move will be degradation of the land, through deforestation and inappropriate agricultural practices. Salinization and waterlogging of irrigated land will reduce output and increase the economic discrepancies between regions. However, even land degradation is a gradual process, which allows for adaptation.

There is a need for further study of the adaptation mechanisms available to individuals and communities. How have regions coped with environmental stress? Why hasn’t resource scarcity resulted in major migrations? What types of adaptation mechanisms can donor nations assist with?

9. *What conclusions can be drawn from the above information?*

The four general conclusions below (some of which are adapted from Lonergan and Parnwell, forthcoming), reflect the answers to the questions above.

- *Generalizations about the relationship between environmental degradation and population movement mask a great deal of the complexity which characterizes migration decision-making.*

Much of the literature suggests a deterministic cause and effect model where a set of environmental stresses will result in a similar response—migration—from individuals and communities. This may occur with certain forms of environmental catastrophe, where there is no option but to move. But in general such a model is very misleading. Levels of internal differentiation within communities are typically high, and thus people will have different levels of ability to cope with environmental stresses. Furthermore, people’s “tolerance thresholds” are highly variable, being surpassed very readily in some (perhaps the more footloose members of a rural community), and being almost insurmountable in others (for instance, older residents who

have a strong attachment to the home area and thus a built-in inertia). A proper appreciation and understanding of the complexity and diversity of human responses to environmental degradation is essential if we are to identify the full extent of the phenomenon and plan accordingly.

- *It is extremely difficult to isolate the specific contribution of environmental change in many forms of population*

cess. There are three important stages in the movement process: survival—using movement as a means of obtaining relief from environmental stresses; recovery—where movers are able to use their movement to recover from the problem, and consolidate their position; and finally, improvement—where a person is able to use movement as a means of enhancing their position and prospects, in which case a return to the place of origin may be less likely to occur. The prospects of

It is apparent that environmental degradation and resource depletion may play a contributing role in affecting population movement, often filtered through contexts of poverty and inequity.

movement, especially those which are more “voluntary” in nature.

It may be relatively easy to identify the parallel occurrence of environmental degradation and population movement, but assuming a causal link may be misleading and dangerous. In reality, movement takes place in response to a combination of environmental, economic, social and political (including armed conflict) stimuli. Thus separating environmental processes from the structures within which they are embedded is both difficult and a distortion of reality.

- *There is also an implicit assumption in the literature that movement is an assured means of obtaining relief from environmental pressures.*

Despite the ancient Chinese proverb that states “Of thirty ways to escape danger, running away is the best” (from El-Hinnawi, 1985), it is not necessarily the case that movement always reduces environmental—or other—stress. In reality, movement may lead to the substitution of one set of stresses (environmental) for another (economic, social, political and/or further environmental stresses). Movers may have to accept whatever opportunities come their way in the new location.

- *An important question—often overlooked where the central preoccupation is with identifying the volume of the migratory movement—concerns the future intentions of environmentally-displaced persons, not least with regard to the duration of their sojourn.*

Do migrants intend to return to their home area, if that option is available, or remain in their new location? The answer to this question will have a significant bearing upon their actions and behaviour in their place of refuge, and is also crucial to the planning pro-

cess. Reaching any one of these stages will be a function of the severity of the environmental crisis and the opportunities which become available to the displacee through movement.

POLICY RECOMMENDATIONS

These four general conclusions underscore the difficulty in developing policy prescriptions to deal with the issue of environmental degradation and population movement. Migration is a complex phenomenon, and it is not clear what role environmental degradation plays in influencing a person’s decision to migrate. It is also difficult, if not impossible, to isolate environment from other social, economic, and political factors. And there has been a dearth of research that focuses on individual or collective human perceptions and evaluations of actual and expected conditions of the environment as a source of insecurity and migration stress. Developing policy prescriptions in this context, therefore, is a risky enterprise, at best. However, accepting these difficulties, two sets of recommendations are presented below. The first set presents general policy recommendations for assisting communities and regions under environmental stress, particularly where that stress may contribute to population movement. The second set provides specific policy recommendations for agencies involved in setting refugee policy.

What types of policy recommendations can one make globally?

Despite the complex nature of migration flows, and the ongoing debate on the role of environmental degradation as a cause of, or contributor to, migration, there is little doubt that we need to give greater consideration to environmental deterioration and resource scarcity in our development assistance activities. This implies a major emphasis on promoting sustainable de-

velopment and its ecological, economic and social manifestations, and ensuring human security. More specific recommendations include:

- Develop a system to help anticipate migrations which might be triggered by environmental disruptions;
- Focus efforts on identifying adaptation mechanisms, and how these mechanisms might be reinforced in vulnerable communities and regions;
- Develop case studies of how environmental degradation influences migration, with specific consideration of developing procedures to assist those affected by environmental disruptions;
- Develop better working relationships among human rights, environment, population and migration organizations;
- Involve migrants and refugees directly in the development of programs to assist those affected by environmental deterioration;
- Recognize the cumulative causality of environmental degradation and population movement, and assist receiving regions to ensure minimal environmental impacts of the migration flows;
- Provide assistance to countries most vulnerable to future environmental change; and
- Recognize that human rights and the environment—indeed, human security and all its components—should be the cornerstone of any assistance policies.

Can we make more specific policy recommendations that are relevant to government agencies?

As noted above, environmental degradation and resource depletion are only two of many factors that may contribute to insecurity and, as a response, population movement. Other key factors surely include population growth and an inequitable distribution of income and/or resources (often linked to impoverishment). The following quote from the World Commission on Environment and Development (WCED, 1987) is telling:

...Poverty is a major cause and effect of global environmental problems. It is therefore futile to attempt to deal with environmental problems without a broader perspective that encompasses the factors underlying world poverty and international equality.

This implies that policy prescriptions should focus on promoting sustainability in resource use, reduc-

ing rates of population growth, and addressing the inequitable distribution of income and access to resources between and within countries. Such policies should also incorporate activities which will assist in reducing both the biophysical and social vulnerability of individuals and communities to environmental change. Examples include:

- An increase in support for family planning in developing countries. Since population growth is a threat to the environment and to the economic livelihood of many people, it is imperative that birth rates are brought down.
- There must be greater focus on agricultural activities in developing countries. This should focus on reducing erosion and deforestation, and increasing the sustainability of small farms in marginal areas.
- Greater effort should be made to improve education and awareness with respect to the environment. This includes care for the environment and sustainable resource use.
- In this context, an adequate supply of freshwater is crucial. It is also imperative that treated water be recycled to agricultural uses. Inefficient use of water, water loss in urban areas, and the lack of systems to use recycled water greatly affect social welfare.
- There must be greater capacity building in the administration of environmental programs. This ranges from increased support for NGOs in the environmental field to the development of government agencies that can participate in international environmental work.

The complex nature of environment—population linkages makes it difficult to develop policy recommendations that are as concrete as many would like. However, it is apparent that environmental degradation and resource depletion may play a contributing role in affecting population movement, often filtered through contexts of poverty and inequity. In turn, it is clear that some population movements—particularly large scale, mass movements—have a negative impact on the natural environment of receiving regions. In order to develop a more concise policy agenda, it is imperative that further attention be given to the links among environment, population and poverty; to which groups are most vulnerable to environmental change; and to identifying vulnerable regions and future “hot spots” of insecurity and potential migration/refugee pressure.

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Notes

- 1 A note on terminology: Throughout the text, three terms are used to denote the role of the environment as a cause of, or contributor to, population movement. My strong preference is to use the term "environmental migrants" or "environmental degradation and population displacement." These terms encompass the range of cases where environmental degradation may result in a voluntary move, an impelled move, or a forced move. However, the term "environmental refugees"—which implies the movement was forced and that international protection is required—has entered the popular language through the various articles and books noted throughout this document (some of them published by the UN). In cases where direct reference is being made to previous work which uses the term "environmental refugees," this term is kept, but included with quotation marks.
- 2 It should be noted that, with global warming, the magnitude and frequency of extreme events is expected to increase, further exacerbating this problem.

U.S. Population Policy Since the Cairo Conference

by Craig Lasher

THE INTERNATIONAL CONFERENCE ON POPULATION AND DEVELOPMENT (ICPD), HELD IN CAIRO IN SEPTEMBER 1994, forged a broad new consensus on the international community's approach to population issues. Over three years after the conference, it is timely to explore the U.S. response to the conference and to the challenges posed by the new consensus.

The government has made real changes in its population policy and the programs it employs to implement those policies. At the policy level, the Clinton administration has elevated the attention generally paid to global issues while raising the priority attached in particular to population stabilization efforts, a welcome departure from the policies of the two previous administrations. On the ground in developing countries, operational agencies both inside and outside government have succeeded in formulating creative new initiatives that build on past experience yet reflect some of the new thinking about the design of family planning and reproductive health programs that took place in the lead up to the ICPD. But the pace of change has been dramatically slowed by funding cuts and restrictions imposed by Congress since 1994.

THE LEGACY OF CAIRO

The "Cairo consensus," as articulated in the conference's *Programme of Action*, incorporates a richer and more holistic view of population and development issues than the documents adopted at earlier international population conferences in Bucharest in 1974 and Mexico City in 1984.¹ The international community has for the last several decades recognized the importance of family planning programs to addressing global population problems. But the ICPD brought about a major shift by placing the discussion of family planning within an overarching ethical and policy framework of broader reproductive health and rights.² The conference reaffirmed that family planning programs should respond to the needs of individuals, and concluded that governments should not impose demographic targets on service delivery programs. In a departure from earlier conferences, the ICPD document breaks new ground in its frank discussion of such controversial issues as the need for sexuality education and contraceptive services for adolescents, the need to prevent unsafe abortion and female genital mutilation, and the importance of high quality reproductive health care.

In a variation on the theme of the Bucharest conference that "development is the best contraceptive," the Cairo consensus also sees social investments in health and education as important not just in their own right but also as key to creating a favorable climate for voluntary fertility decline and eventual global population stabilization. Quantitative goals were established for the expansion of girls' education and opportunities, the reduction of infant and child mortality, and universal access to family planning and reproductive health services by 2015. The need to improve the status of women through changes in the traditional roles played by men and women was also a cross-cutting theme in the ICPD document.

Many of the debates that seized the conference participants and dominated media coverage mirrored U.S. domestic politics surrounding reproductive rights and international population assistance. The heated debates set the stage for subsequent developments in U.S. legislative and executive branch policies. For example, early in its deliberations, the conference threatened to completely unravel over one paragraph in a lengthy document which dealt with abortion. Other issues proved contentious with conservative Catholic and Muslim countries and nongovernmental groups. They included efforts to define terms such as reproductive rights, fertility regu-

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lation, safe motherhood, and sexual and reproductive health, and to design the programs and policies associated with them.

In the end, the widespread focus on the serious public health problems of maternal health and unsafe abortion was a largely positive development, bringing these issues to the attention of a wider public. But the extended debate on abortion distracted attention from the broad goals of the conference and resulted in the relative neglect of other vital issues. In particular, conference discussions failed to adequately address the relationship between population, the environment, and sustainable development. In other cases, agreement on important factors such as HIV/AIDS and the role of men in family planning received scant public attention.

The absence of major North-South conflicts also distinguished Cairo from its predecessors. The effects of this classic division may have been dampened because the preparatory process leading up to the conference clearly recognized that both excessive consumption in the wealthier industrialized countries and rapid population growth in the poorer developing countries contribute to global population problems. As a result, the conference ended with 180 nations adopting, by consensus, a comprehensive strategy to address population and development issues over the next twenty years. For the first time in the history of UN population conferences, not a single official delegation rejected the entire document. All actors were able to claim victory. The more liberal U.S. and Western European country delegations, as well as women's and family planning groups, were pleased by the overall progressive tenor of the document. The Holy See and conservative nations and groups meanwhile claimed to have prevented what they perceived to be a conspiracy to undermine the traditional family and to make access to safe abortion a worldwide right.

A crucial feature of the ICPD document, with direct relevance to U.S. population policy, was the call for a dramatic increase in spending on population programs and the social sector. An agreement was reached in Cairo that roughly \$17 billion will be needed in the year 2000 and \$22 billion in 2015 for both family planning and broader reproductive health programs. In the early 1990s, worldwide spending on population is believed to have totaled \$4 to \$5 billion from all sources, including both donor assistance and spending by developing country governments and consumers. The *Programme of Action* calls for total expenditures to more than triple the funding level at the time of the conference and for the United States and other donor countries to increase their share of the expenditures from one-quarter to one-third of the total. Although the United States made no new explicit commitments on financing at the conference, the U.S. government had increased its population assistance funding by about

25 percent in the two years prior to ICPD. While several donor countries announced plans to increase population assistance, most other donor countries and developing countries made no new pledges at Cairo, undermining the prospects for implementing the new vision of population programs.

U.S. POPULATION ASSISTANCE AND ITS POLITICAL CONTEXT

The U.S. government initiated an international population assistance program in 1965. Despite recent funding cutbacks, the United States remains the single largest contributor of population and family planning funds among industrialized countries and the recognized world leader in the population field in terms of knowledge, expertise, and experience. U.S. population assistance has traditionally focused on expanding and improving family planning services. But the United States is now being looked to for the design and implementation of the broader agenda of new reproductive health care and women's empowerment initiatives agreed to at the ICPD.

The U.S. Agency for International Development (USAID), which implements the U.S. foreign aid program, has supported contraceptive services provided by both governments and nongovernmental organizations (NGOs), supplied contraceptive commodities, trained health workers and managers, and introduced creative new approaches to educating people about family planning and in reaching them with services. The international population and family planning program is widely acknowledged as one of the most successful U.S. foreign aid programs.³

Virtually every major innovation in the population and family planning field can be directly or indirectly linked to U.S. support. For example, USAID has pioneered a variety of successful approaches to extending family planning through the private sector such as social marketing, and the sale and distribution of contraceptives through existing commercial outlets at subsidized prices. Modern technology has also been effectively applied to the population field in the areas of mass communication and demographic data collection and analysis. In addition, USAID has supported biomedical research, which has been instrumental in the development of a number of new contraceptives, including several now in use by American couples.

USAID has built a strong public-private partnership with U.S.-based cooperating agencies—NGOs, universities, businesses—which have been indispensable to USAID. These partners can provide high quality technical advice and support to overseas field programs. USAID's dedicated staff of career experts on population and related areas and its substantial in-country presence are unique among donor agencies and have also contributed to the effective implementation of projects, as well as the success of country programs.

Tens of millions of couples use family planning services as a direct result of U.S. population assistance. Millions more have adopted family planning due to USAID support for a broad range of technical assistance, training, information, communication, policy, and research activities in developing countries. In the twenty-eight largest recipient countries of USAID funds, the average number of children per family has dropped from 6.1 in the 1960s to 4.2 today, a decline of nearly one-third.⁴

The United States provides its population assistance through three channels: bilateral, centrally-funded, and multilateral. About half of the funds have been provided directly to the governments of developing countries for bilateral projects managed by USAID field missions. The other half of the funds support a wide range of population activities through worldwide or regional projects implemented by NGOs and centrally-funded through the USAID Office of Population.⁵ USAID currently supports population activities in about sixty nations. In addition, the United States has also been a major contributor to the United

where it was announced. The U.S. policy reversal denied U.S. assistance to a foreign NGO if it had any involvement in legal abortion, even if paid for with non-U.S. funds. In addition, the Reagan and Bush administrations interpreted a Kemp-Kasten anti-coercion amendment enacted by Congress very broadly, resulting in the defunding of UNFPA in 1986 because of its projects in China.

In 1993, President Clinton overturned the Mexico City Policy as one of his first official acts. The Mexico position had been implemented by executive branch regulations and reversal did not require legislative action. The U.S. contribution to UNFPA was restored later that year. The Kemp-Kasten amendment was interpreted more narrowly and Congress approved language in the appropriations bill disassociating the United States from any coercive practices and ensuring that no U.S. funds given to UNFPA would be used in China. It is with this programmatic and political background that the U.S. government is attempting to implement the ICPD *Programme of Action*.

Stabilizing population growth is considered one of three global issues judged important to U.S. national interests...

Nations Population Fund (UNFPA), the largest multilateral organization involved in population and the lead United Nations agency on Cairo implementation.

During the 1960s and 1970s, the U.S. population program enjoyed a significant level of bipartisan support in Congress and in the executive branch.⁶ A strong consensus existed that rapid population growth was one of the world's most serious problems, undermining the prospects for economic and social progress in developing countries and posing a long-term threat to U.S. national interests in the areas of trade, security, environment, and international migration. Domestic political considerations related to the contentious issue of abortion led the Reagan and Bush administrations to directly challenge this consensus. Nevertheless, Congress allocated comparable levels of program funding until recently, even in the absence of executive branch commitment in previous administrations. Substantial funds have been earmarked for population assistance every year since 1967.

In the 1980s, domestic political debates on abortion spilled over into international population assistance policy. The use of foreign aid funds for abortion has been prohibited in statute since the passage of the Helms amendment in 1973, and support for biomedical research on abortion was banned in 1981. But the Reagan administration imposed additional restrictions in 1984 with the initiation of the Mexico City Policy, named for the international population conference

U.S. EFFORTS TO IMPLEMENT THE CAIRO AGENDA

The U.S. response to the challenge of implementing the Cairo conference agenda has three dimensions: 1) policy changes reflected in official statements; 2) incorporation of conference recommendations into U.S. foreign aid programs; and, 3) commitment of financial resources to achieve the Cairo goals.

New Policy Directions

The United States took a lead role in the process leading up to the ICPD and at the conference itself. Moreover, private U.S. women's organizations were key actors in promoting the new thinking on international population issues. They successfully argued for recognizing the crucial roles women's empowerment and education play in reducing fertility. So it is no surprise that recent official statements of U.S. policy reflect the consensus reached by the Cairo conference. But they also incorporate other long-standing demographic rationales for U.S. population assistance.

The *U.S. Department of State Strategic Plan*, issued in September 1997, illustrates both the continuity and the changes in U.S. population policy since Cairo. According to the plan, stabilizing population growth is considered one of three global issues judged important to U.S. national interests, along with securing a sustainable global environment, protecting human health and reducing the spread of infectious diseases. The plan

declares:

Stabilizing population growth is vital to U.S. interests. Economic and social progress in other countries can be undermined by rapid population growth, which overburdens the quality and availability of public services, limits employment opportunities, and contributes to environmental degradation. Not only will early stabilization of the world's population promote environmentally sustainable economic development in other countries, but it will also benefit the U.S. by improving trade opportunities and mitigating future global crises. There is now broad international consensus on the need for a comprehensive approach to population stabilization which, along with family planning services, incorporates reproductive rights and other components of reproductive health, women's socioeconomic and educational status, and the special needs of adolescents.⁷

Specific strategies are then articulated as necessary for achieving the U.S. government's goal of stabilizing world population. These policy prescriptions reflect recommendations made in Cairo and include:

- promoting the rights of couples and individuals to determine freely and responsibly the number and spacing of their children;
- providing leadership on international population issues and encouraging international cooperation;
- supporting programs to achieve universal access to family planning, maternal health, and other reproductive health services by the year 2015;
- improving the environment in which population programs operate, including efforts to enhance women's status and educate girls and expand opportunities for young people; and
- involving civil society in population and development activities.⁸

Achieving U.S. population policy goals, the plan observes, requires maintaining existing broad international support for population stabilization, lifting congressional restrictions on U.S. population assistance funding, increasing worldwide commitments to basic education and economic opportunities for women and girls, and expanding investments in population-related activities by other donors (bilateral, multilateral, and private).

The coexistence of multiple rationales for U.S. government involvement in international population

policy is nothing new. Such rationales have existed since the inception of the U.S. population assistance program in the mid-1960s. Statements by senior Clinton administration officials have reflected these multiple rationales before and after Cairo. For example, high-level officials have advanced the more demographic and national interest-related argument on the relationship of population growth to future conflicts over natural resources popularized by Robert Kaplan in his *Atlantic Monthly* article, "The Coming Anarchy." These officials include President Clinton himself, former Under Secretary of State for Global Affairs Timothy Wirth, and USAID Administrator J. Brian Atwood.⁹ The renewed interest in using these arguments publicly has resurrected some of the economic and national security rationales for U.S. population aid that had been largely abandoned during the Reagan and Bush administrations.

Meanwhile, Secretary of State Madeleine Albright's statements promoting equal rights for women as an integral part of U.S. foreign policy appear more obviously influenced by the ICPD and the 1995 Fourth World Conference on Women in Beijing. Her public statements have also been strongly supportive of U.S. assistance for international family planning and reproductive health programs. But Secretary Albright clearly recognizes the importance of population programs not just to maternal and child health and women's status, but also their importance for a broad range of international concerns and U.S. interests. According to Albright:

Clearly, family planning saves lives, enhances the well-being of women and their children, and prevents recourse to abortion. International family planning also serves important U.S. foreign policy interests: elevating the status of women, reducing the flow of refugees, protecting the global environment, and promoting sustainable development which leads to greater economic growth and trade opportunities for our businesses.¹⁰

Changes in Programs

At the beginning of the Clinton administration and prior to the Cairo conference, USAID formulated a new strategy to stabilize world population and to protect human health. Announced in March 1994, this strategy gives special emphasis to the reproductive health needs of women and adolescents, while building on the agency's strengths in the field of family planning.¹¹ This new and expanded focus complements the principal objectives of the USAID population program: 1) to promote the rights of couples and individuals to decide freely and responsibly the number and spacing of their children; 2) to improve individual health (particularly the reproductive health of women and ado-

lescents and the health of infants and children); 3) to reduce population growth rates to levels consistent with sustainable development; and, 4) to make programs responsive and accountable to the people they aim to serve.

The new population strategy was adopted as USAID reconsidered its mission in the post-Cold War era. USAID has termed population and health programs as one of the pillars of sustainable development, along with protecting the environment, building democracy, encouraging broad-based economic growth, and providing humanitarian assistance. At the same time, the agency, under the Clinton administration, has placed more emphasis on sustainability, participatory development, partnerships with nongovernmental organizations, and the greater integration of development programs across sectors.

The period since the Cairo conference has been a particularly difficult one for USAID's population program. The agency has faced uncertainty over a possible merger with the Department of State, budget and staffing reductions, mission closings, and management changes. In the population sector specifically, the agency has had to cope with budget cuts, metering, the allocation of funds on a monthly basis, and a congressional effort to dismantle completely the population programs.¹²

Even as USAID has faced these problems, it has taken steps to reshape its population assistance program to support the broad reproductive health approach advocated at ICPD. USAID has made particular progress in the area of strengthening links between family planning and other reproductive health activities.¹³ The agency has wisely and responsibly chosen to focus selectively on those activities that are believed to be the most cost-effective in improving the quality of health care, in increasing access to services, and in achieving maximum impact on public health.

Before and immediately after the Cairo conference, USAID launched a new adolescent reproductive health project, supported a consortium of organizations working on post-abortion care, and designed new strategies to increase attention to preventing sexually transmitted diseases within family planning programs. In addition to work in those areas, USAID has increased attention to and support for other reproductive health activities including: improving maternal health and safety, expanding nutrition programs for women, promoting breastfeeding, preventing harmful traditional practices such as female genital mutilation, encouraging male involvement in the promotion of reproductive and sexual health, increasing the role of women in the design and management of programs, and addressing the reproductive health needs of refugees. In the area of women's empowerment, USAID adopted a Gender Action Plan in 1996 which created several new initiatives designed to expand girls' and women's edu-

cation, women's legal and political rights, and women's access to credit.

The creation of the Population, Health, and Nutrition (PHN) Center within USAID's Bureau for Global Programs, Field Support and Research is another especially noteworthy development. The PHN Center, established in 1994, brings together the Office of Population, the Office of Health and Nutrition, and the Office of Field and Program Support under unified management, a move that has contributed to improved collaboration and cooperation between family planning and other health programs.

A reflection of that increased coordination are several joint, centrally-funded projects that have been initiated, such as the new PVO Networks project which integrates reproductive health and child survival activities, the FRONTIERS project in the area of operations research, the new MEASURE project dealing with evaluation and survey research, and the FOCUS project dealing with the reproductive and sexual health needs of young adults.¹⁴ Reflecting the new integration of health and population objectives, all USAID staff working in population and health are now called PHN Officers. There are no longer any Population Officers.

The U.S. population assistance program, however, faces a number of vulnerabilities which could negatively affect its ability to promote expanded family planning services and better reproductive health in line with the goals of the ICPD. Notwithstanding recent congressional attacks directed at population funding, both program funds and operating expense funds necessary to manage projects had been dwindling agency-wide. Over the past decade, USAID has experienced a substantial decline in the number of technical staff. Meanwhile, management burdens on staff are increasing, and PHN officers manage roughly double the volume of funds compared to 10 years ago. As part of its efforts to streamline operations, USAID is also moving ahead with its plans to close 21 overseas missions and to phase out population assistance in a number of countries of strategic importance to the United States. Mission closings have already occurred in a number of African nations and in important countries such as Pakistan. In addition, USAID plans to phase out assistance to Brazil and Mexico by the year 2000 and to Indonesia, Morocco, and Turkey soon thereafter, both as a cost-saving measure and in recognition of these countries' considerable success in meeting their demographic and development objectives.

Financial Commitments

Commitment of a whole new magnitude of financial resources remains the key to achieving the ICPD's ambitious objectives. Both developed and developing countries need to significantly increase funding for family planning and reproductive health, and for the so-

cial sector generally. As Dr. Nafis Sadik, UNFPA Executive Director and Secretary-General of the conference, stated, "Without resources. . . the Programme of Action will remain a paper promise."¹⁵

Grant aid for population programs from donor countries may have increased by as much as 25 percent in 1995, the latest year for which data is available.¹⁶ Bilateral population assistance for 1995 is estimated at \$1.6 billion, up from \$1.2 billion in 1994. Total population assistance in 1995, including World Bank lending and other multilateral sources, reached \$2 billion. However, a significant amount of the apparent increase in 1995 may reflect changes in the definition of population assistance rather than a real expansion in donor commitments. Starting in 1995, UNFPA has broadened its traditional definition of population assistance to incorporate the broader reproductive health initiatives for which cost estimates were developed in the ICPD action plan.

Several donor countries have significantly boosted funding for population programs in the lead up to or since the Cairo conference, most notably Germany, the United Kingdom, the Netherlands and Denmark. Nevertheless, overall donor assistance for population remains far below the trajectory required to achieve ICPD funding goals. Total donor assistance stands at about a third of the \$5.7 billion donor target for year 2000 adopted in Cairo. Allocations to population programs in a number of other countries, most significantly the United States, are moving in the wrong direction. Population assistance has suffered under downward pressure on foreign aid budgets in many industrialized countries. In other countries, a lack of priority for population programs remains a constraint on increasing contributions. The prospects for major increases in donor population assistance, therefore, do not appear promising.

U.S. population assistance, which in recent years has accounted for roughly half of all donor assistance, has declined by about a third over the last three fiscal years. Funding cuts and restrictions imposed by family planning opponents in Congress account for this decline. The recent cuts mean that the United States is even farther behind in meeting its appropriate share of the ICPD spending target for the year 2000, based on the size of the U.S. economy relative to other donor nations. Since the U.S. financial contribution has traditionally represented such a large share of total resources, the funding cut does not bode well for fulfilling the Cairo spending goals.

THE 1994 CONGRESSIONAL ELECTION AND THE U.S. RESPONSE TO CAIRO

The U.S. response to the new challenges posed by Cairo has been profoundly affected by a drastic shift in the political climate in Congress surrounding reproduc-

tive rights issues and in particular international population assistance programs. The euphoria among U.S. population organizations, resulting from the favorable changes in international population assistance policy introduced during the early Clinton years, as well as in Cairo, was short-lived and abruptly interrupted by the November 1994 congressional elections.

In the November election, the Republican party won a majority of seats in the House of Representatives, for the first time in forty years, leaving the Republicans in control of both the House and Senate chambers. The new conservative leadership in the House moved quickly to implement its vision of downsizing the federal government. While its legislative blueprint, the *Contract with America*, focused principally on domestic concerns, its emphasis on tax and spending cuts resulted in large reductions in foreign aid, including population assistance. Foreign aid was viewed as an easy target because of the widespread perception that international spending has no domestic political constituency.

As a result of the election, international population assistance opponents outnumbered supporters in the House, a stunning reversal of the situation prior to the Cairo conference. Although population assistance supporters continue to retain a majority in the Senate, they do so only by a slim margin. More importantly, the shift to Republican control left some of the principal critics of population assistance, such as Representative Chris Smith (R-NJ) and Senator Jesse Helms (R-NC), as chairmen of key committees and subcommittees with jurisdiction over population assistance.

This revolutionary change in Congress has meant a profound historical shift for U.S. population assistance policy. During the 104th and 105th Congresses, anti-choice opponents of family planning elected since the Cairo conference have sought repeatedly to reimpose the Mexico City Policy and to cut-off U.S. funding of UNFPA legislatively. These efforts have had devastating results for U.S. population assistance. The Clinton administration and pro-assistance members on both sides of the aisle have successfully beat back House Republican attempts to place additional abortion-related restrictions on USAID programs. But that success has come at a high price in terms of funding for international population assistance.

Since achieving a majority in the 1994 election, conservative members of the House have insisted that additional abortion-related restrictions be imposed on international family planning funding despite firm opposition from the Senate and the Clinton White House. Their goal has been the enactment into law of the so-called "global gag rule amendment," aggressively championed by its principal sponsor Rep. Chris Smith (R-NJ). The amendment would bar both multilateral and foreign nongovernmental organizations from receiving U.S. family planning funds if, with other

non-U.S. funds, they provide legal abortion services or engage in any activity or effort to alter the laws or governmental policies of any foreign country concerning the circumstances under which abortion is permitted, regulated, or prohibited.¹⁷

While the global gag rule amendment has not become law, severe restrictions have been placed on the release of population assistance funds in the three fiscal years since Cairo (FY96, FY97, and FY98). These restrictions are the price paid for blocking the efforts of family planning opponents to enact new population policy restrictions. For example, the FY96 foreign aid appropriations bill allocated just \$356 million for international population assistance. This level represented a 35 percent funding reduction from the all-time high for population assistance of \$547 million the previous year and was disproportionate to cuts in other foreign aid programs. But the drastic funding cut was also coupled for the first time with restrictions on the release of the funds. As a result, the population program has had severe disruptions that continue in some form to this day. The release of the appropriated funds was delayed for nine months, and the funds were then available only on a month-to-month basis at a rate of 6.7 percent of the total, ensuring that just a small fraction of the funds was actually spent in the remaining three months of that fiscal year.

The following year, population assistance funds for FY97 were delayed five months as a result of a complicated legislative deal negotiated to break another deadlock over international family planning issues. Once again, family planning disputes threatened to shut-down the federal government. Under the deal, the release of funds for international family planning was blocked for nine months again unless a presidential finding determined that the delay was having a negative impact on the program. Congress then would have to approve this conclusion. If the presidential determination was approved by Congress, \$385 million in bilateral population assistance would begin flowing on March 1, 1997, although still available only in small monthly increments.

As required by the legislation, President Clinton formally transmitted a finding to Congress which stated that it was his determination that a delay will cause serious, irreversible, and avoidable harm to the population program. He dramatized in stark terms what was at stake if family planning funds were not released quickly: the lives and well-being of many thousands of women and children and America's credibility as the leader in family planning programs around the world.¹⁸ The finding also noted that the delayed release of funds and metering (the allocation of funds on a monthly basis) was an administrative nightmare, which had cost the American taxpayers over \$1 million to implement. Population assistance supporters celebrated when the House approved the presidential

finding on a vote of 220 to 209, and the Senate did likewise by a margin of 53 to 45.

In 1997, family planning supporters were again successful in resisting the imposition of new population policy restrictions. As in the last three years, ideological battles over population assistance made the foreign aid appropriation one of the last bills to be resolved before Congress adjourned for the year. Congressional and White House negotiators traded conditions on the timing of the release of population funding for a rejection of new policy restrictions. The 1997 deal followed a similar formula, except that the crippling, months-long delays in the availability of funds imposed in previous years were eliminated completely, allowing \$385 million in FY98 to begin flowing immediately. Funds continue, however, to be metered.

But House family planning opponents raised the stakes even further, successfully tying their demands for enactment of the global gag rule to larger foreign policy concerns. After an effort to link the issue to votes for fast track trade legislation failed, the House leadership blocked the repayment of U.S. debts to the United Nations, funding for a new International Monetary Fund line of credit, and reorganization of U.S. foreign affairs agencies until family planning opponents get satisfaction on population policy. In light of the United Nations' pivotal role in monitoring Iraq's weapons development program and continuing turbulence in Asian financial markets, debates over population policy will undoubtedly resume in 1998 and are likely to bring continuing political difficulties for U.S. population assistance.

CONCLUSION

In an interconnected world, Americans stand to benefit from efforts to slow population growth with its negative impacts on the global economy and environment. The prospects for peace and economic development in the twenty-first century will depend in part on slowing population growth and on meeting human needs. But without continued commitment, there is no assurance that current trends toward slower population growth will continue.

It is clear that U.S. leadership and funding remain vital to global population stabilization efforts and the implementation of the Cairo agenda. As the industrialized nation with the largest population and economy, the United States remains the biggest donor in the field. The United States must not falter now in its efforts to expand worldwide access to family planning and related reproductive health services as called for in the *ICPD Programme of Action*.

The policy implications of this evaluation for the work of the U.S. government in its efforts to implement the Cairo agenda are three-fold:

- The executive branch from the President on down must continue to work to rebuild the case for U.S. involvement in global population stabilization efforts. By combining the health, rights, and women's empowerment agenda of Cairo with the more traditional economic, environmental, and national security rationale for a U.S. government role, policymakers may be able to marshal the support of the Congress and the American public in renewing the commitment to international population assistance as an essential part of this country's foreign aid program.

- Program managers, both inside and outside the U.S. government, must build on ongoing initiatives to improve the availability and quality of family planning services while at the same time increasing investments in the other reproductive health and development interventions highlighted at ICPD. The incremental approach adopted by USAID, relying on a careful assessment of reproductive health and development needs and the capacity of developing country governments to address those needs in a cost-effective manner, has proven to be the right way to operationalize the new vision of population programs adopted at the Cairo conference. But more clearly needs to be done in the future.

- The Administration and Congress must work together to find additional financial resources for international population assistance in order for the United States to get on the upward trajectory necessary for us to meet our appropriate share of the Cairo funding goals. The creation of clearly articulated policies and innovative programs is meaningless unless adequate financial support is available for those policies and programs to be properly carried out and implemented. And that support has been severely lacking since 1994.

For the last thirty years, the United States has paved the way for other governments to become involved in global population stabilization efforts. U.S. leadership, however, has been undermined since Cairo by the actions of opponents of population assistance who have demanded funding cuts and restrictions on family planning. Congress must restore funds in order for the United States to get back on the path of carrying its fair share of Cairo funding commitments and to meet the responsibility that comes with its wealth and role as a world leader.

ENDNOTES

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- ⁵ U.S. Agency for International Development, Office of Population, *Overview of USAID Population Assistance FY 1996*, June 1997.
- ⁶ For a more detailed discussion of the history of U.S. population assistance, see Phyllis T. Piotrow, *World Population Crisis: The United States Response* (New York: Praeger Publishers, 1973) and Peter J. Donaldson, *Nature Against Us: The United States and the World Population Crisis, 1965-1980* (Chapel Hill, N.C.: University of North Carolina Press, 1990).
- ⁷ U.S. Department of State, *U.S. Department of State Strategic Plan*, September 1997, pp. 70-71.
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- ¹⁸ U.S. Executive Office of the President, "The Impact of Delaying USAID Population Funding from March to July 1997" (Justification for a Presidential Determination on Section 518A(a) of the Foreign Operations, Export Financing and Related Programs Appropriations Act), January 1997.

Why Environmental Transformation Causes Violence: A Synthesis

by Günther Baechler

CORRELATIONS BETWEEN TRANSFORMATION OF SOCIETAL-NATURE RELATIONSHIPS AND VIOLENT CONFLICTS ARE NUMEROUS. This analysis will examine the critical role of transformation regarding *causation* of environmental conflicts in certain areas of developing countries. One has to build on prepared empirical ground to highlight different patterns of causation, to select types of environmental conflicts in terms of different pathways leading to violence, as well as to stress the sociopolitical characteristics of environmental conflicts.

The empirical ground for the following typology has been provided by the Environmental Conflicts Project (ENCOP). This international research project has focused on the interrelationship between environmental degradation, maldevelopment, and violent conflict. Forty area studies were carried out by a permanent research team based in Bangladesh, Germany, Great Britain, Nigeria, and Switzerland. Additional regional specialists and inhabitants of the countries under consideration also contributed to the case studies.¹

The study group adopted a working definition of environmental conflicts in order to narrow the focus of the globally oriented study. According to this definition,

environmental conflicts manifest themselves as political, social, economic, ethnic, religious or territorial conflicts, or conflicts over resources or national interests, or any other type of conflict. They are traditional conflicts *induced by environmental degradation*. Environmental conflicts are characterized by the principal importance of degradation in one or more of the following fields:

- overuse of renewable resources;
- overstrain of the environment's sink capacity (pollution);
- impoverishment of the space of living (Libiszewski 1992:13).

Two concepts led to this definition. First, the study group assumed that both structures and actors played roles if and when environmental problems contribute to conflict. Taken together the two determine the type of conflict that is triggered by environmental issues. Second, it focused on renewable resources and excluded minerals and non-renewable resources. However, if mining, dam building, or industrial activities directly or indirectly led to widespread disruption of landscapes, then these conflict-prone activities constituted cases which fit into the definition.

After completing the ENCOP investigation, it is clear that neither apocalyptic scenarios of environmental catastrophes nor alarmist prognoses of world environmental wars are tenable. Environmentally-caused conflicts escalate across the violence threshold only under certain conditions. Human-induced environmental change can be either a contributing or a necessary factor to both the emergence and/or the intensification of violent conflicts. On one hand, violent conflicts triggered by environmental disruption are due in part to socioeconomic and political developments. On the other hand, social and political maldevelopment, due in part to degradation of natural resources, has become an international peace and security challenge. *Development and security dilemmas* are connected to a syndrome of problems which produces environmental conflicts of varying intensity and nature.

The discussion that follows explores the specific triggering and inhibiting factors which determine conflict behavior. The framework for this discussion is a typology of conflict levels and parties to conflict, and a generalizable examination of the environmental role in causing conflict and in intensifying current conflicts. More details on the specific ENCOP cases can be found in the appendix.

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**1. ENVIRONMENTALLY CAUSED VIOLENCE:
A PHENOMENON OF DEVELOPING AND TRANSITIONAL
SOCIETIES (HYPOTHESIS ONE)**

Environmental conflicts² are caused by certain ecological problems of particular intensities. Yet these conflicts remain social and political events. Therefore, several attributes of conflict must be considered together for a complete explanation of environmental conflicts: actor characteristics, interests, actions, and outcomes based on those actions. The first hypothesis holds:

Violent conflicts triggered by the environment due to degradation of renewable resources (water, land, forest, vegetation) generally manifest themselves in socioeconomic crisis regions of developing and of transitional societies if and when social fault lines can be manipulated by actors in struggles over social, ethnic, political, and international power.

The ENCOP cases provide ample evidence for the assumption that developing and transitional societies—or, to be more precise—discriminated groups within those societies, are most affected by interactions between environmental degradation, social erosion, and endemic violence. Crisis areas susceptible to conflict are found in 1) arid and semi-arid plains (drylands); 2) mountain areas with highland-lowland interactions; 3) areas with river basins sub-divided by state boundaries; 4) zones degraded by mining and dams; 5) tropical forest belts; and 6) poverty clusters of sprawling metropolises. In these sensitive areas found in Africa, Latin America, Central and Southeast Asia, as well as Oceania, traditional society-nature relationships, regulated by cultural-specific approaches to the environmental problems, are acutely at risk.

All those conflicts have in common the phenomenon of marginalization of one or more actors. One major exception exists: inter-state conflict over shared river basins. Although there are cases where conflicts between upper and lower riparians occur in marginalized ecoregions of neighboring states, *e.g.*, Eastern Anatolia in Turkey versus Syria and Iraq, in most cases geopolitical and strategic security issues stand in the foreground. Disputed water resources and rural development issues, (*e.g.* the farmers in Syria and Iraq), are shoved into the background. These priorities apply especially for regional water conflicts in the Middle East that transpire within the framework of historic territorial conflicts.

However, conflicts induced by marginalization of certain groups share the problem of discriminatory access to natural resources. Thus the concept of environmental discrimination is crucial to all the conflicts under consideration. *Environmental discrimination occurs when distinct actors—based on their international position and/or their social, ethnic, linguistic, religious, or regional identity—experience inequality through systemati-*

cally restricted access to natural capital (productive renewable resources) relative to other actors.

The conflict geography of environmental conflicts corresponds largely with that of regional conflicts. Conflicts tend to occur in the South, a pattern observed since World War II. In fact, the number of armed conflicts immediately after 1989 has risen sharply due to the collapse of the Soviet Union. In the early 1990s conflicts occurrence in the Eastern transitional societies has again ebbed slightly, and since 1994-95, a decline has taken place in the total number of violent conflicts and wars. This development notwithstanding, the number of ongoing violent conflicts in the South—particularly those of low intensity—is still high and probably increasing due to links with maldevelopment. This judgment results from various regional analyses which, in contrast to conventional war registers, include the assessment of unrest leading to bloodshed as precursors of environmental conflicts. For example, in Central Asia a number of such incidents of unrest have already taken numerous human lives but are not registered in available databases (*e.g.*, Fergana Valley). Additional relatively low-level conflicts of this kind will likely escalate either in the short intermediate term. In these cases, environmental crisis serves as an indicator of likely state failure and thus expected major conflict (*e.g.*, Northern Ghana).

Most environmental conflicts are carried out between actors within a country (*see: fig. 1, A and appendix*). In some cases, internal conflicts become internationalized (*see: fig. 1, B*). Most of those that do spread across borders involve migrants or refugees coming from war-torn or marginal rural areas of a neighboring country. Seeking fertile land or jobs, they cause political, social, or ethnopolitical conflicts outside their region of origin. The internationalization of internal conflicts can also be the consequence of new states created after the collapse of an empire. With the dissolution of the Soviet Union, for instance, the new Central Asian republics now face water distribution conflicts which suddenly have become international conflicts.

Finally, there are environmental conflicts between states which from the very beginning have an international dimension (*see: fig. 1, C*). Those conflicts may result from degradation of regional environments or the global commons. Contention surrounding ozone layer depletion and climate change (including sea level rise) are political conflicts with no major military dimensions to date. But today, international disputes arise especially between nations mutually dependent upon the cooperative use of international river basins. Although the cases examined in the ENCOP studies did not result in violent clashes, considerable potential for military actions persists among some upper and lower riparians (Baechler *et al.* 1996:158-165).

Distinguishing between the three levels A (internal), B (internal with interstate aspects), and C (inter-

state) only serves as a rough orientation to environmental conflict. The boundaries among the levels are literally fluid. Classifying a given conflict at just one level, especially over time, is often impossible. Internal conflicts may be fueled by international events, whereas the latter may be the result of an escalating domestic war. A further fine-tuning is therefore needed. It is necessary to relate the type of environmental degradation to socioeconomic change and to parties to the conflict, herein referred to as *actors*. Seven ideal types of environmental conflict can be distinguished: I. ethnopolitical conflicts; II. center-periphery conflicts; III. regionalist migration/displacement conflicts; IV. transboundary migration conflicts; V. demographically-caused conflicts; VI. international water/river basins conflicts; and VII. international conflicts arising from distant sources due to neocolonialist exploitation of resources (the latter conflict is seen as a variant of center-periphery conflicts). Sometimes it is difficult to decide under which category a given conflict is best listed. Rwanda, for instance, maybe type AII (ethnopolitical conflict) or BVI (demographically-induced conflict). However, for analytical clarity, each case is listed in only one category.

There is no intention to provide empirical details concerning the cases here. An encompassing table including the list of the cases related to each individual type of conflict, the indication of the environmental dimension of the conflict, the parties involved, and the conflict intensity can be found in the appendix. The following synthesis of the case studies carried out in the framework of ENCOP refers to the cases included in this table. They provide the empirical background

in many cases analyzed by ENCOP. Conflicts emerge because 1) two or more ethnic groups share one ecozone with degraded and thus unproductive resources, or 2) ethnic groups depend on neighboring ecozones with highly distinct degrees of productivity. In the first configuration, conflicts escalate because one or more ethnic groups have limited access to needed natural resources. In the second set of conditions, violence occurs if and when the environmentally discriminated group invades the territory of the neighbors who are environmentally better off.

Similar to the center-periphery conflict (*see: 1.2*), ethnopolitical conflict represents a modernization conflict at its core. The difference is that the fault line does not run between a defined center and its periphery. Instead, the cleavages for ethnopolitical conflict run along group-specific traits within ethnically fragmented societies. In a few cases, population pressure on an ecologically sensitive region beset with scarce and degraded resources contributes to the hardening of inter-ethnic relations (*e.g., Rwanda; Bangladesh versus Assam Province in India*)(*see: appendix, BV. 25*).

Overuse of land, forest, and fresh water resources lead to ethnopolitically motivated conflicts if and when they combine with certain geographical and climactic factors. In many areas of rural societies, for instance, the traditional dualism between subsistence farming on one hand and (semi-) nomadic livestock breeding and large-scale ranching on the other, is at stake. Since the two different producer groups belong usually to distinct ethnic or indigenous communities, the competition over resources becomes the core of an ethnopolitical conflict. What colonialism was not able

Table 1

Taxonomy of environmental conflicts according to the different levels in the international system

Conflict Levels:

A: internal

B: internal with inter-state aspects/internationalized states

C: between states

Adversaries:

identity group* vs. identity group
government vs. identity group
government vs. migrants/refugees

government (and local population) vs. immigrants from third states

government vs. government
(international) government vs. IOs/INGOs

for the *generalizations* provided in this article.

1.1 Ethnopolitical Conflicts (Type AI)

Environmental and ethnic discrimination coincide

to do, the present struggle for fertile land definitely achieves: it opens up ethnically preserved environmental "niches" of groups that used to live generally apart. Owing to intensive use of both ecologically favorable areas with high fertility and unfavorable areas with low

fertility by a growing number of rural producers, ethnically defined living space is giving way to ethnic mixing and social stratification. This process, which largely contributes to new clusters of ethnic groups facing environmental discrimination, is triggered by degradation of scarce resources. It may also be aggravated by modernization processes, on-going protracted violence or wars.

The competition over degraded lands has another dimension that overlaps with center-periphery conflicts. Huge areas of the most fertile land are under cultivation for monocultures (food and most often cash crops), or are serving commercial purposes of central governments (such as Wildlife Parks). As a result, increasingly less productive land remains exclusively for labor intensive food crops. Rural populations put pressure on available land and further stress the landscape. However, identity groups—whether tribes, clans, or ethnic groups—are in general not willing to surrender land which they claim as the land of their ancestors. Historically land use and land tenure disputes have led to deliberate violent measures. But only recently such traditional conflicts have been aggravated by the negative ecological impacts of maldevelopment in the rural sector throughout the developing world. Both environmental discrimination against identity groups as well as the availability of modern small arms have made these conflicts even more brutal (*see: appendix, AI.1-6*. Case studies by Baechler 1996II: 461-502; Klötzli 1996II: 247-336; Lume 1996III: 175-202; Suliman 1996II: 109-180).³

1.2 Center Periphery Conflicts (AII)

Relationships between members of the center and the periphery in developing countries often assume precarious forms owing to environmental transformation. National elites and international investors in the modernizing centers have certain economic, environmental, and energy policy preferences as well as opportunities at their disposal because of their access to resources including power. At the same time, the socioeconomic opportunities for most levels of the rural population prove to be extremely limited. Areas inhabited by poor rural dwellers are indeed often environmentally vulnerable and degraded. Environmental degradation also contributed to the development of rural and (per-) urban poverty clusters by undercutting health conditions, constraining productivity, and shortening time horizons for adequate reactions. A lack of resources makes it extremely difficult for the poor to escape the environment risks or to invest in risk-reducing and income-generating strategies (see section 1.4 on cross-border migration conflicts).

The catalysts to escalate center-periphery conflicts are primarily large cash crop farming projects, dams,

and mining. Globally-oriented companies pursuing capital intensive, high-technology and high-energy projects are confronted with identity groups dependent on natural capital with low or no commercial energy input. The clash is heavily conflict-prone if and when the society-nature relationship for an area that has had little or no integration into the market economy, is transformed by third party economic interventions that run counter to rural dweller's interests and preferences. Mechanizing, collectivizing or, depending on the region, privatizing the rural economy marginalizes traditional cultivating methods, land-use patterns, and land tenure systems. Landscape erosion through soil and water degradation from large-scale commercial farming, mining, and industries erode living orders for peripheral populations.

Actors highly dependent on the disputed natural capital but facing environmental discrimination see themselves as prisoners of modernization or of structural heterogeneity respectively. In poor countries modernization seldom provides valuable off-farm opportunities. Only relatively few among rural dwellers — which constitute up to 95 percent of least developed country populations — find regular incomes in the commercial sector. Still fewer receive financial compensation for the loss of natural capital or for being forced to use marginal land. Quite often companies and central governments break promises on the positive impacts of huge projects. Marginalized groups endure more discrimination through project-driven transformation of the environment. Modernization without participation makes them feel more disadvantaged materially, socially, culturally, and spiritually than ever before. Intensified rivalry for scarce water, shrinking settlement areas, and protective soils belong to the inevitable consequences of this maldevelopment.

Center-periphery conflicts differ greatly depending on the degree of periphery dependence on the center and the level of underlying power asymmetry. In contrast to dam or mining projects, the interdependence between center and periphery concerning agricultural and irrigation projects is usually high. If necessary, mines or dams can be protected militarily; large areas of irrigated land cannot.

There is an international variant of center-periphery conflict (*see: C.VII*). Whereas the center-periphery conflicts discussed above pit national elites (governments/economic sector) and international firms versus less powerful populations, the international type sets outside powers against developing country governments. Severe conflicts surround *neocolonial exploitation* of the natural environment against the will of the governments of an affected region. Since the power asymmetry among the two actors is significant, the escalation potential of this kind of global conflict is minor in comparison to the environmental problem it creates. Concerning the only such example analyzed by

ENCOP, namely the French nuclear tests in the Pacific, the worldwide protests were relatively moderate. Bloody violence and direct confrontation between the French army and protesting groups (including Greenpeace), however, occurred only in Polynesia, *i.e.*, in the immediate neighborhood of the nuclear explosions. The conflict was contained in the local arena far from the center of the globally acting player, France. Although this kind of globalized center-periphery conflict is an exception (Bhopal in India and other “accidents” did not have the same level of global response), it is indeed not inconceivable that in the near future asymmetric socioeconomic impacts of climate change, ozone layer depletion, and sea level rise will lead to similar constellations (*see appendix, A.II.7-19*) Case studies by Böge 1996II: 503-720; Claus 1996III: 269-2645; Okoh 1996II: 181-246; Schönenberg 1996III: 315-358; Schwark 1996III: 359-408; Wegemund 1996III: 285-314; König 1996III: 149-174; *see also* Böge 1993; Carino 1993 (manus.); Quimpo 1993 (manus.)).

1.3 Internal Migration Conflicts (Type III)

Internal migration conflicts are triggered by either 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). Its direction leads from depressed areas to more favorable zones such as fertile rural or (peri-) urban areas. Although both push and pull factors work together, the push factors are stronger. Forced displacement and expulsion, on the other hand, are due almost entirely to push factors that often appear in connection with large (agro-) industrial, mining, and dam projects.

Inter-regional migration and displacement—as a special type of internal dislocation—pit people of the same ethnicity from different regions against each other. The most important fault lines are those between highlanders and lowlanders, pastoralists and farmers, rural and urban population. Mountaineers for instance, drawn downwards by the quest for jobs, income, and land, get caught in competitive situations with indigenous populations. The distinct society-nature relationship of newcomers and settled populations triggers tensions, clashes, and in some cases violent conflicts.

Thus a myriad of social interactions emerge. In locally overpopulated and degraded mountain regions with nomadic cultures and few off-farm opportunities, environmental degradation and stress prompt major migration waves into irrigated areas and into urban fringe with resident farming cultures. Integration of former livestock breeders is difficult in large irrigated areas with monocultures (*e.g.*, Himalayan pastoralists

in the plains of Central Asia). On the other hand, farmers also migrate from eroded highlands into fertile valleys settled by semi-nomads (*e.g.* in the Horn of Africa). Thirdly, conflicts emerge if semi-nomadic pastoralists flee from persistent drought and soil erosion to semi-arid and subtropical mountain regions settled by farmers (*e.g.*, in Sudan).

The basic patterns of these three interactions between highland and lowland residents are comparable. Inter-regional migration conflicts are in part determined—as are the other conflict types discussed here—by environmental discrimination against actors who are heavily dependent on scarce natural resources. A second factor of significant influence is poor state performance⁴ in marginal areas. High dependence on natural capital combined with poor state performance are two main reasons why discriminated groups are attracted to rich rural areas and country capitals. These two factors are critical in countries with great regional disparities not offset by the rule of law and democratic mechanisms. However, poor state performance is also an inhibiting factor for large-scale migratory movements, namely in cases when poor state performance coincides with illegitimate and oppressive regimes that have been able to put vast territories under military control (*e.g.*, the Kurds in various countries).

Inter-regional conflicts are commonly confined to local arenas and cover neither the entire country nor the core of state power. Violent conflicts (skirmishes, clashes, and riots) occur in disputed rural zones. Some conflicts spread to (peri-) urban arenas and blend in with violence and criminal gang behavior, at times involving former soldiers or mercenaries. Inter-regional migration or resettlement lead to political struggles for state power if and when groups that had been discriminated against succeed in penetrating the ruling elite or driving it out of power in other ways (*see: appendix, A.III.20-23*. Case studies by Faath 1996III: 203-268; Schönenberg 1996III: 315-358; Smil 1996III: 127-148; Melber 1996III: 409-440).

1.4 Cross-Border Migration Conflicts (Type BIV)

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 politically orchestratable conflict potential. Even though the term “environmental refugee” is rejected by the United Nations High Commissioner for Refugees (UNHCR), the linkages between migration and environmental discrimination have been acknowledged by UNHCR head Sadako Ogata (Ogata 1994:41-47). UNHCR is concerned with environmental disruption as a serious consequence of large refugee movements (mainly in large camps depending on fuelwood). However, transformation of the environment is itself a reason for migration and flight. Migrations channeled

by environmental discrimination intensify conflicts where the economic situation is eroding and political instability deepens lines of conflict. In some cases the use of violence opens pre-colonial divisions between rival identity groups.

Environmentally-induced migration normally takes the form of slow infiltration over a long period of time. People move into areas that either permit survival or provide favorable living conditions. Only in exceptional situations such as acute drought do massive flights occur spontaneously. The escape routes are diversified. In many regions it pays to cross the national frontier because more favorable foreign destinations lie geographically nearer than the remote capital of one's native country. Frustration and despair can explode into violence in host countries or transboundary regions populated by hostile identity groups or by earlier migrants from common identity groups who show hostile behavior toward the newcomers. Occasionally the routes also lead to the northern industrial countries.

The following key factors hold for both internal migration and displacement as well as cross-border migration and flight.

1. *Problems arising from poverty and poor state performance:* As mentioned above, the largest proportion of populations in developing countries settles in rural areas. Some poverty clusters suffer not only from environmental discrimination but also from insufficient infrastructure, unclear or competing land ownership, sub-division of already small plots, and lack of credits. Phenomena as varied as soil erosion, heavy rains and flooding, drought, salinization, deforestation and woodland clearing, and overgrazing of savannas accelerate the dissolution of traditional living orders. Such living orders include specific ensembles of economy, culture, neighborhood, and kinship groups (families, lineages, and clans). Reaching a point of no return, people have no choice but to give up their homestead. At the same time market economies absorb only a few rural dwellers who are drawn out of their traditional environment. The market induces a highly selective dissolution of traditional structures. Thus landscape degradation belongs to the very transformation that has produced most of the migrants and refugees leaving their degraded environment to date.

2. *Problems arising from modernization:* Problems of modernization include mechanized farming, mining, and urbanization. The various side effects of these activities—such as a total loss of land, the use of fertilizers, salinization, and pollution—encourage rural dwellers to withdraw. They have in fact only two alternatives: either move to more marginal lands and clear them, or join the marginalized in (peri-) urban areas. Shrinking lakes (Aral Sea, Lake Chad), flooding, irri-

gation, loss of biodiversity and the spread of epidemic diseases force resettlement, expulsion, and escape.

3. *Problems arising from the location of population growth:* Population growth occurring in marginal areas creates more potential victims of natural events (such as landslides, earthquakes, and volcanic eruptions). These perils are incorrectly perceived as “natural catastrophes” and not “social catastrophes.”

A conflict-prone situation worth mentioning is the intercontinental migration from southern to northern continents. Along the North-South fault lines, industrial countries are trying to stop the entry of illegal immigrants and to facilitate their return. Some of the migrants come from environmentally degraded areas and can be viewed as victims of a globalized resource distribution conflict. As a rule, however, refugees from environmental degradation lack the necessary resources and health for long and costly trips. For this reason, the destinations of most migrants and refugees commonly lie close to home. If one pursues the route of a migrant from his homestead to his possible destination in an industrial country, conflicts occur at various stops along the way: in neighboring ecological regions, in the national capital, in the space just across the national border, in third countries, and only in few cases in other continents. Various obstacles represent significant inhibiting factors for large-scale and long-distance migration (see: appendix, AB.IV.24. Case studies by Faath 1996III: 203-268; Baechler 1994; Gallagher 1994:65-72; Ogata 1994:41-47; Suhrke 1994:93-100).

1.5 Demographically Caused Migration Conflicts (Type BV)

High population pressure in ecozones of low productivity causes either local conflicts or migration, which can lead to, conflicts in the area of destination. Demographic developments matter for environmental migration conflicts in three different ways: population scale in relation to resources available (density), population growth rate, and resource redistribution through migration and displacement. It is difficult to highlight the causal linkage among population pressure, environmental degradation and violence. Yet in a few cases (Rwanda, Bangladesh/ Assam, and Indonesia/Java), ample evidence suggests that such connections do exist.

The repeated sub-division of land into smaller and smaller inheritance shares is an indicator for these connections. Fragmented arable land, decreasing yields per hectare, and a lack of off-farm alternatives coerce large parts of the rural population to migrate toward urban areas where conflict potential increasingly accumulates. This potential relates to land use and distribution in growing peri-urban areas as well as the environmental decline in mega-cities (Girardet 1996:67-115).

Another indicator of demographically induced migration is the clearing and cultivation of new land in remote mountains, in deltas, and in ecologically sensitive coastal areas. Landless people and semi-nomads gradually move into protected zones in urban areas or into national parks. Social unrest can recur as these movements provoke clashes with governmental troops and contribute to politically unstable situations (e.g., the Maasai in Kenya and in Tanzania). Acute conflicts occur if the discrimination is perceived as tremendous by the actors affected. The threshold for discrimination depends greatly upon the perception and varies from case to case. Generally speaking, discrimination is perceived to be unacceptable when social and/or ethnopolitical factors accumulate, facilitating group identity building (e.g., between Bengali immigrants and residents of Assam province in India).

Population dynamics accelerate the impact of other key factors such as poverty, inadequate land use and land tenure systems, environmental transformation, and poor state performance. This constellation of factors encourages cross-border migration, which—in the context of violent coups and civil wars—assumes the form of mass flight, (e.g., in the Great Lakes region in Africa) (see: *appendix, B.V. 25-27. Case studies by Hafiz/ Islam 1996II: 1-108; Ehrensperger 1993 (manus.)*).

1.6 International Water Conflicts (Type CVI)

International river basins are the most obvious example of the general contradiction between ecoregional boundaries and state borders. The asymmetric dependence of upper and lower riparians on an international river basin triggers political tensions, international bargaining, and military threats. Since lower riparians are more vulnerable than upper riparians they can easily receive discriminatory access to fresh water resources. River pollution and water distribution conflict are distinct problems. The former refers to the substantial degradation of resources, whereas the latter refers to economic scarcity. Pollution conflicts are represented as strife over an indivisible public good that affects levels of pollution, political responsibilities, and economic costs. Since neighboring riparians have a vested interest in solving pollution problems cooperatively—in win-win solutions—such conflicts are easier to resolve than those over access to the resource per se. Distribution conflicts turn out to be conflicts over divisible public goods. They are perceived as zero-sum games. Discriminatory access to scarce water resources affects national sovereignty and integrity more directly than pollution. Both pollution and distribution can obviously appear in combined forms which complicates the search for cooperative solutions.

International conflicts over water use develop in the context of strong riparian interest in securing access to the shared water resources, of asymmetric power

distribution among riparians, and of the quality of the multilateral relations generally. Conflict dynamics also depend on climatic and geographical conditions, population growth, the economic structure, and the state ability to cope with vulnerability. Therefore, in addition to given hydrologic conditions, the political and socioeconomic *milieu* is of central importance for settling international water conflicts. There is no direct linkage between water pollution and distribution on the one hand and the intensity of conflicts; it is the political context that matters.

In regions that suffer from seasonal drought if not from permanent water crises (e.g., the Middle East), distribution and discrimination are highly sensitive issues, which are treated as threats to national security. Because water flow is easy to manipulate by riparians of a shared basin, scarcity conflicts in crisis-prone regions inevitably get mingled with other contributing factors. But the example of the Arab-Israeli peace process shows that negotiations about water management are possible even under conditions of acute scarcity on one hand and protracted conflict on the other. This process is possible because all actors perceive water issues to contribute to no-win solutions. On the other hand, water talks can easily be canceled if and when the political situation changes.

There is no automatic spiral toward violence. To date no open wars have been caused by water distribution issues alone. Even in arid zones where states are extremely dependent on external water resources (Egypt), there has been a balance, albeit a precarious one, between threat and cooperation. The geographic course of a river is a power factor worthy of attention. If a country is the upper riparian and well-equipped militarily, it holds all the trump cards. It can discriminate thoughtlessly against lower riparians through regulating the cross-border water flow. If superiority is overwhelming, cost-benefit analysis will keep lower riparians from engaging in a war-like dispute despite the discrimination. The presence of a hegemon controlling the sources of a basin have a thoroughly stabilizing effect if the power demonstrates some flexibility and furnishes competence to enable mutually satisfying technical solutions (e.g., to some extent USA-Mexico concerning the Rio Grande and Colorado River Basins).

Within the context of institutionalized and cooperative relations, power relationships are mediated by legal barriers and rules of behavior derived from custom. The best case scenario for avoiding the escalation of water distribution and pollution conflicts are regimes which focus on current realities. Therefore, water conflicts in and between industrial countries are settled with peaceful means because of the parties' high degree of negotiating competence and existing regulatory mechanisms at the policy level (see for instance the dispute settlement capacities of the Rhine Commission in Western Europe). Environmental conflicts become a

catalyst for cooperation if political compromises are seen as desirable and technical solutions as feasible. Successful compromises or even institutionalized mechanisms of dispute settlement reduce the danger of water-use conflicts racing out of control.

Only if water issues coincide with extremely unfavorable political conditions will they become a trigger of warlike actions (e.g., between Israel and Syria in the prelude to the Six-Day War). The asymmetrical geographic positions in the basin then come into play as the upper riparian puts pressure on highly vulnerable neighbors. Some water related conflicts coincide with center-periphery conflicts. If dominant riparians turn out to be authoritarian regimes with poor state performance, water issues further delegitimize central governments in the eyes of discriminated groups which are highly dependent on water for agriculture (e.g., Kurds in Anatolia, Syrian and Iraqi farmers below Turkish dams on the Euphrates and Tigris rivers). On the Indian subcontinent, river basin conflicts are imbedded in a context marked by extreme poverty, ethnopolitical schisms, and the hegemonic demands of a regional power. These factors induced sociopolitical conflicts within the lower riparian Bangladesh or between Bengali migrants and inhabitants of the Indian Province Assam (see: appendix, CVI. 28-39. Case studies by Baechler *et al.* 1996: 117-166; Gleick 1996III: 1-26; Hafiz/Islam 1996II: 1-108; Klötzli 1996II: 247-336; Libiszewski 1996II: 337-460; Okoh 1996II: 222-232; Rogers 1996III: 25-64; Thomas 1996III: 65-126; Wegemond 1996III: 285-314; Baechler 1997; Durth 1993; Klötzli 1993).

1.7 Global Environmental Conflicts (Type CVII)

Climate change and stratospheric ozone depletion demonstrate the globalization of environmental transformation. Globalization is considered to be a rather conflict-prone process by various authors (Myers 1993; Renner 1996). Predicted developments towards a global environmental conflict formation notwithstanding, specific statements about the socioeconomic and ecological effects of climate change cannot be made based on the case studies carried out in the framework of ENCOP (Baechler *et al.* 1996: 329-332). Socio-politically significant sea level rise, for instance, will be a phenomenon of the intermediate and long-term future. Continuing drought in the arid and semi-arid zones is not clearly attributable to the anthropogenic climate change. Nonetheless, international concerns (e.g., the global campaign of the Small Island States) indicate that there is potential for future conflict. Due to the development dilemma, the victims of global transformation will be found where environmental discrimination has already provoked a precarious situation. If current conflicts can be traced back to global environmental phenomena at all, they presumably concern mainly

domestic conflicts of types AI (center-periphery conflicts), AII (ethnopolitical conflicts), and AIII (internal migration conflicts). In other words, acute conflicts do not arise along the great fault line between North and South, but rather where climate change contributes to the collapse of local rural structures and regional political authorities.⁵

1.8 Conflict Types. Conclusions

Discrimination against actors in sensitive ecological areas and a high level of dependence on natural capital are two key factors determining the conflict potential of transforming society-nature relationships. Conflicts about degraded renewable resources manifest themselves as international, center-periphery, inter-regional, and group identity struggles exacerbated by migration and displacement, and in some cases accelerated by population dynamics. Actors with access to state power typically have access to the most productive areas whereas identity groups facing environmental discrimination are forced to use and degrade marginal arenas with low productivity, thereby perpetuating impoverishment. Additionally, groups against which environmental discrimination works are confronted with environmental deterioration *beyond* their control: deforestation by loggers destroys the livelihood of indigenous forest dwellers, dam building degrades land both upstream and downstream, mining leads to widespread contamination of the landscape, and industrial water pollution leads to the depletion of inland and coastal fisheries.

The hypotheses of the Environmental Change and Acute Conflict Project (ECACP) co-directed by Thomas Homer-Dixon are basically confirmed by the cases evaluated above (Homer-Dixon, 1991; 1994). There is indeed little empirical support for the first hypothesis that environmental scarcity causes violent conflicts or wars between states. Thus alarming statements such as “water wars” or “green wars” definitely are to be questioned. Environmental conflicts tend to be “persistent, diffuse, and subnational.” (Homer-Dixon, 1994).

Simultaneously there is substantial evidence to support the second hypothesis that environmental scarcity causes large population movements, which in turn cause conflicts. There is only one finding where ENCOP results differ from ECACP. While Homer-Dixon suggests a linearity between large population movements and group-identity conflicts, ENCOP suggests that migration is linked to different kinds of conflicts: socioeconomic conflicts between highland and lowland producers, conflicts between rural and urban dwellers, as well as conflicts between rural producers and a central state’s forces. Migration also causes conflicts within one and the same ethnic group that may be divided by geographical or national boundaries.

Empirical evidence partially supports the hypoth-

However passing the threshold of violence definitely depends on sociopolitical factors and not on the degree of environmental degradation as such.

esis that environmental scarcity simultaneously increases “economic deprivation” and “disrupts key social institutions.” This is despite the fact that ENCOP refers to different theoretical concepts than ECACP. “Deprivation conflict,” as one general type introduced by Homer-Dixon, has comparable connotations as the ENCOP types: center-periphery, ethnopolitical, internal migration, and global environmental conflicts. The concept of “disruption of key social institutions” is incorporated in the context of this study with the concepts of *marginalization* induced by discrimination against certain actors on one hand and by poor state performance in certain areas on the other.

Moreover, environmental conflicts in most cases involve rural populations in developing countries struggling for survival. Modernization and a high dependence on degrading resources challenge the livelihood security of rural dwellers. The probability that conflicts will escalate is high when

- a major contradiction exists between economic expectations and/or a larger demand for resources on one hand, and limited development perspectives, degraded resources, and poor state performance on the other (e.g., few off-farm alternatives, lack of technical skills, and financial means);
- at least one of the actors involved perceives the resort to violence as the best alternative to other solutions.

It is necessary to include many “if-then” clauses when examining violent outcomes of environmental conflicts. Environmental degradation may be a background reason for a certain conflict, it may be a factor leading to channeling or cleavages along lines between distinct groups, and it may even be a triggering factor to a conflict dynamic. However, passing the threshold of violence definitely depends on *sociopolitical* factors and not on the degree of environmental degradation as such. Critical sociopolitical factors include the lack of institutional capacities for peaceful conflict settlement, the readiness and/or capacity of authorities and leaders to organize and mobilize collective actors, the (mis-) perception of alternatives to resorting to violence, the preferences and opportunities of actors, and actor limitations. These topics have to be examined in more detail to better understand when and at what point environmental conflicts turn violent.

2. INEVITABLE SITUATIONS AND THE LACK OF REGULATORY MECHANISMS (HYPOTHESIS TWO)

When considering the interests and the behavior of actors, action can be seen as the result of two consecutive filtering processes of decision-making. Concerning the first filter, how does transformation influence the opportunity sets of individual and collective actors? Related to the second filter, how does transformation shape actors’ preferences so that violent conflict is considered the mechanism for solving environmental conflict?

In all forty ENCOP case studies, transformation of society-nature relationships was perceived as *serious* in terms of both degradation of renewables and discrimination against actors highly dependent on their shrinking natural capital. Yet only *eighteen* of these cases crossed the threshold of violence. In *eight* cases there were wars, whereas in *ten* cases, there were violent conflicts below the threshold of war. In *twenty-two* ENCOP cases—of which none serve as control cases—neither war nor violent conflict was present. In *eleven* of these cases, minor incidences of violent actions occurred that were below the threshold of violent conflict. *Nine* cases experienced either military threat or political tension only. And in *two* cases, the disputed projects were dropped or postponed.

Against this empirical background the conclusion is reached that the resort to violence only occurs if and when some of the following *five key situations* coincide:

Inevitable environmental conditions: Group survival is dependent on degraded resources for which no substitutes are apparent and eventually the group faces an inevitable and therefore desperate environmental situation. Inevitability does not stand for a deterministic or functional approach to human behavior. *Inevitable circumstances* are environmental conditions upon which an individual or a collective actor cannot rely upon rationally or deliberately.

Scarcity of regulatory mechanisms and poor state performance: When a political system is incapable of producing certain social and political conditions, goals, such as sustainable resource use, become unattainable. The scarcity of regulatory mechanisms is either due to a lack of state outputs regarding resource management and livelihood security or due to a disruption of (traditional) social institutions designed to regulate access to resources. Migration, for instance, can be a result of the first type of scarcity (state output) and thus provoke the second type of scarcity (disruption of institutions).

Institutionalizing the environment: The environment is instrumentalized or manipulated by dominating actors to pursue specific group interests so that environmen-

tal discrimination becomes an (ideological) issue of group identity. Instrumentalization can reach from the up-stream manipulation of the seasonal water flow for political reasons to the voluntary poisoning of water resources.

Opportunities to build organizations and find allies: Actors organize and arm themselves in political settings—often behind a strong leader—and gain allies either from groups affected by similar problems, from certain (fraternizing) factions of the elite, or from foreign groups such as I(N)GOs.

Spillover from a historic conflict: Environmental discrimination occurs within the context of an existing (historic) conflict structure and, as a result, the conflict receives new impetus. This push can come either from the perceived consequences of environmental transformation or from intensified resource competition between polarized actors.

These five contexts constitute the arena for actors who choose violence as their best alternative to non-violent activities.

2.1 Inevitable Situations

Rural dwellers experiencing environmental transformation depend more and more on fewer and fewer productive or available natural resources. Time horizons are very short as rapid resource extraction meets present needs—despite the resistance of third parties. If survival is at stake on a day-to-day basis, even minor incidents can force a decision about whether to stay and probably die or to flee. Violence may be viewed as a way to escape when no substitutes are available for degraded resources and/or the relationships between parties are stressed with no alternatives.

An inevitable situation has two sides: a lack of off-farm alternatives and poor state performance. High socioeconomic pressure on rural populations is paired with the powerlessness of policymakers to achieve desirable goals such as the wider distribution of more productive land, the creation of jobs, and the alleviation of poverty. The crisis of subsistence economies, therefore, is caused by both external and intrinsic factors. Both are closely intertwined. External factors are the commercialization of agriculture and related issues. The major intrinsic factor is the relatively low and even declining productivity of subsistence economies, due to poverty driven population dynamics in marginal ecozones.

Inevitable situations tend to lead actors in a certain area to hold mutually exclusive goals. This, in turn, provokes rigid polarization and—as a possible consequence—the resort to violence. Most environmental conflicts have to be seen as part of a new wave of re-

bellions where rural producers find themselves in inevitable situations. The area's groups encompass peasants, small holders, subsistence farmers, landless people, rural workers, life stock breeders and other rural groups. The opposite party in this conflict encompasses large-scale farmers, agro-business, *latifundistas*, rural entrepreneurs, international companies (e.g., mining), urban dwellers, and certain political elites.

Inevitability is a *relational* rather than an absolute term. Many situations perceived as inevitable—such as “natural catastrophes” in a densely populated arena—are in fact avoidable social or *humanitarian catastrophes*. Inevitable situations are determined by major social stresses induced by an overwhelming density of conflictual interactions. Regulatory interventions to preserve productivity must occur faster and more intensely for almost exhausted land than for fertile land. Stresses can be caused by shorter fallow periods if at all; multifunctional land use: more frequent change of crops, more frequent movements of herds, and sharper competitions. Simultaneously a growing number of activities take much more time than before (hauling water, collecting fuelwood, finding pastures and water wells, cooking with solar energy, etc.).

2.2 Lack of Regulatory Mechanisms

Inevitable situations occur because of a lack of regulatory mechanisms, be they traditional conflict and resource management, modern law, or international regimes. If instruments for managing resources and regulating conflicts become ineffective over time, actors may come to view violence as a thoroughly rational means of pursuing their own interests. Instruments become blunt because traditional means are inadequate to new challenges of environmental discrimination. And new institutions based on modern law are not yet available to meet these challenges. In marginalized regions, the central state has not succeeded as an administrative and law-enforcing apparatus or as an institution founded on the rule of law, legitimized and accepted by the local actors.

With respect to environmental conflicts, the role of legal and civil institutions cannot be overemphasized. Civil society as a subsidiary conflict-regulating corrective is (largely) lacking in the countries analyzed although large differences exist between some medium developed and least developed countries. Nonetheless, political pluralism or the ability of opposition movements to make their claims is weakly developed in cases where violent conflicts and wars occur. The less stable and developed regulatory mechanisms are in a given society, the more susceptible the society will be to violence. The more established the rule of law and civil society, the lower the level of violence and the more meaningful the use of force. In participatory

societies, countless and sometimes serious environmental conflicts are resolved by legal and political means. Negotiation, compromise, and mediation play a central role. The organized use of force is not a central part of political strategy.

A state's authority to act consistently vis-à-vis environmental transformation should encompass a large array of economic, social, and institutional instruments: assess suitability and support crop choices, enhance the workability of land, provide access to markets, make credit and cash available, introduce land property rights, etc. Most of such instruments are hardly available in the ENCOP case studies where an *appropriate choice* would sometimes have made the difference between degradation and sustainability. Local and regional areas if not the state as a whole are subordinated to the interest of the center, often more concerned about adhering to international standards on commercial and investment law than on internal developments outside the capital district. Parts of the marginalized population see the state as a bureaucratic apparatus or as a hostile agent for foreign interests that plunders national resources without redistributing the revenues to provinces and communities.

The establishment of subsidiary conflict and resource management mechanisms would presume more than a mere economic distribution logic. Yet precisely the lack of conflict-resolving mechanism prevents innovative practice. In many places the ruling political culture allows little latitude to manage resources subsidiarily, the lowest level possible (except on marginal and degraded lands of minor value). As a consequence, there is widespread insecurity concerning property rights. Property rights disputes have rarely been solved satisfactorily, depriving a prerequisite for effective local self-government and sustainable resource management. Property rights enhance livelihood security and thus contribute to labor-intensive improvement of the productivity of sensitive soils.

States with poor performance are unwilling to adapt existing international regimes to new challenges (e.g., Nile riparians). Nor are they committed to delegate substantial authority to supra-national regional organizations that aim at acquiring dispute settlement capacities (e.g., International Governmental Authority on Development, IGAD) in the Horn of Africa). Existing environmental agreements often express good will, but they show a considerable lack of binding legal power and strict implementation. The search for the least common denominator, weak enforcement mechanism, and "free riders" characterize regional agreements.

Weak states are not committed to assuming political responsibility for the ecological crisis. Governments instead tend to count on internationalizing responsibility for the crisis and waiting for foreign assistance. Due to the weakness of civil society on the other hand,

(re-) privatization of state power occurs through relatively small and inaccessible cliques usurping the state's monopoly on the use of force and changing its function into a spearhead against the population experiencing environmental discrimination. Only in relatively few cases is the disadvantaged group capable of responding with organized violence to the poor performance of their state and/or to the robbery of local natural capital by national elites.

2.3 Instrumentalizing the Environmental Problem

Due to the great importance of safe water supply for vulnerable states, international river basins are easily instrumentalized as political means of pressure or blackmail. As discussed earlier, a strong upper-riparian state can carry through geopolitical interests against its lower-riparian neighbor. For its part, the lower riparian clearly has fewer means of pressure available. However, it can seize the water issue in order to denounce the upper-riparian state's unethical behavior. This strategy helps to create international awareness and to mitigate the asymmetry between the actors.

In cases where heavy environmental damage is caused by third parties (e.g., mining companies), the protection of nature proves to be good mobilizing factor for local groups. This strategy also can be beneficial because environmental consciousness is rewarded on a global level (by the UN, INGOs, etc.). Using the ecological vocabulary, although previously concerned little with nature protection, is often the only way for marginalized groups to get attention concerning their generally worsening living conditions (e.g., Ken Saro-Wiwa and the Ogoni in the Delta State of Nigeria).

Opposition groups tend to instrumentalize ecological crises in their criticism of the state. Organized actors in opposition sometimes use segments of groups facing environmental discrimination for ulterior political motives. Remnants of communist guerrillas, now faced with recruiting problems, side with the demands of protesting farmers against deforestation and export business. And due to the penetration of agents for outside interests, indigenous peoples with close and mythical nature relationships see a political advantage in making environmental disruption central in their criticism of the modernizing state. Thus, while feeling uncomfortable with the infiltration of the modern world, they emphasize the cultural and spiritual dimensions of deep human-ecological relationships. The destruction of sacred "mother earth" by foreigners is rejected as extremely immoral and as a threat to humanity.

2.4 Opportunities to Build Organizations and Find Allies

Instrumentalizing or manipulating environmental transformation is not presumptively explosive. A mili-

tary conflict only emerges if specific fault lines accentuate it, if polarizing actions drive it forward and if groups are organized and mobilized. In order to do so leadership and arms are required.

It is noteworthy that the threshold of organized use of force in environmental conflicts is relatively high in comparison to the large amount of environmental discrimination occurring throughout the world. Given the level of environmental discrimination with at least 500 million of the poorest people living in ecologically sensitive zones (about 400 million in rural and about 100 million in urban zones), how can one explain the fact that force has been used in so few cases to address these grievances? There is certainly no linearity between environmental discrimination and the use of violence. Many inhibiting factors are involved. The same cause had, as a matter of fact, different effects: individuals prove to be unwilling or unable to join a group with strategic goals; various communities and identity groups have virtually no capacity to go to war. Different reasons account for these outcomes: marginalization, lack of means and organizational skill, lack of leadership, state repression, poor health condition, wide-ranging apathy, fatalism, defeatism, and religious mystification at one's own situation.

Only groups that actually organize and arm themselves seize the means for collective resistance against other parties in the arena. The ability and opportunity to ally and build coalitions with other actors constitute important prerequisites for organized violence. The mainly rural actors capable of waging conflict need powerful coalition partners from different social levels to support their goal (for instance, part of the *intelligentsia*, members of the middle class, or a charismatic leader of an ethnic minority at risk). Many scholars of peasant revolts have come to the same conclusions as Barrington Moore, namely that "(p)oor peasants and landless laborers ... are unlikely to pursue the course of rebellion, unless they are able to rely on some external power to challenge the power which constrains them" (Wolf 1969: 290).

It is the weaponry that makes a difference. Through proliferation of cheap weapons, especially widely available small arms, individual conflicts—*e.g.*, between farmers and nomads—assume a more dramatic turn of events than was probably intended by parties to the dispute. Quite often, parties that historically have fought each other with traditional weapons, underestimate the lethality of modern arms. The capacity to carry out an armed conflict is especially reinforced where marauding armed gangs, militant youth groups, and demobilized soldiers or mercenaries are entrusted with the supply of weapons and/or take part in military actions.

Yet coalition possibilities are not always available to groups attempting to redress environmental discrimination. With few exceptions, communist guerril-

las with greater fighting experience have dropped out as potential alliance partners (*e.g.*, Malaysia, the Philippines). The UN has recently demobilized the last armies to fight against the colonial powers (*e.g.*, Mozambique). As a result, it has become more difficult than in the 1970s and 1980s for rural populations under discrimination to find combat-ready allies.

Furthermore, national and international environmental organizations (I(N)GOs) are committed as a rule to nonviolent forms of resistance. Their solidarity and expertise are aimed at environmental concerns and they are prepared to oppose government positions (*e.g.*, IUCN concerning the Okavango basin in Botswana). But these groups do not resort to using armed force. In the international context of the United Nations, increasing value is placed on peaceful resolution of disputes within nations. Groups prepared to use force therefore cannot count on support as they could for colonial and post-colonial liberation movements.

2.5 Context of an Ongoing Armed Conflict

The remarks on the limits of using force apply if environmental conflicts are not drawn into the maelstrom of historical armed conflicts or even provoke them anew. Environmental problems such as the scarcity of river water can have massive consequences within the framework of a comprehensive historical conflict, (*e.g.*, water issues in the Middle East).

A more frequent phenomenon can be seen in the twofold interaction between environmental destruction and war. Many domestic and international Third World wars carried out within the context of the Cold War have had devastating impact upon renewable resources. Deforestation, destruction of vegetation, and expulsion or killing of farmers and livestock caused massive degradation in regions such as the Horn of Africa where highland areas were already threatened by heavy erosion. In the aftermath of protracted civil wars, rural development is more risky than before the war. The environmental destruction—previously a result of protracted conflict—may itself become a contributing or triggering factor of a future confrontation.

3. THE ROLE OF THE ENVIRONMENT AS A CAUSE OF CONFLICT

Which role does environment play if and when it causes a violent conflict? Is it a deep-rooted reason for violent conflict? Does it shape group identity? Or is it an intervening variable contributing to the escalation of violence?

As most of the area studies show, transformation of society-nature relationship does play an interesting role in causing violence. In the cases under consideration, environmental degradation is supposed to be an exogenous or necessary factor to the conflict; this

means the conflict would not have occurred in the same way—or even at all—without environmental degradation being an important variable.⁶ The evaluation also indicates that the role of environmental discrimination—depending on the individual case—can be quite different. Its role ranges from discrimination being a background reason to the point where it is a proximate trigger to a violent conflict. In the causal analysis, therefore, it is critical to clearly distinguish among the various impacts environmental degradation has on the conflict behavior of actors.

3.1. Reason

First, transformation of society-nature relationships plays a role as a *reason* for conflict. It is perceived as almost predestined and, from the viewpoint of the groups affected, hardly within their power to ward off. This is the great background role of the environment being the permanent “noise” in the system. Transformation of landscapes in a historical dimension and its effects “act” as either hidden or clearly visible “system powers” by touching on the opportunities and preferences of affected actors in many ways.

Due to complex interactions, it is often hard to distinguish between the role of transformation of the landscape and the role of economic decline. However, there is an important difference between *economic* scarcity and *environmental* scarcity which has always been neglected in classic economics. Economic scarcity addresses the distribution problem of man-made goods between those interested in access to these goods. Environmental scarcity, on the other hand, highlights the input side of a third (external) factor, namely of natural resources provided by the landscape as a life support system (land, water, mineral, coal, oil, gas). Economic conflicts are political conflicts that deal with the production and (re-) allocation of human and physical capital, whereas environmental conflicts are political conflicts that are concerned with the availability of natural capital. The latter is a necessary prerequisite to any economic activity. The subjects of environmental conflicts are degraded sources and over-strained sinks. For example, eroded and marginal land trigger conflicts over access to productive land. Polluted water resources trigger conflict over access to rich fishery resources. Hence, the reason or the *casus belli* are the increasing availability of “common bads” and the discriminated access to scarce “common goods.”

3.2. Trigger

Second, transformation of the landscape plays a role as a *trigger* if actors perceive discrimination as inevitable. A trigger causes an actor who previously preferred non-violence to prefer violent action. Sudden events such as crop failures trigger migration and flight that lead

to violence. Violent action cannot be excluded as a possible outcome if livelihood security is at stake and organized actors face environmental discrimination (e.g., ethnopolitical conflicts).

The transformation of the landscape triggers violence if it is obviously caused by projects of third parties (e.g., mining company/central government on Bougainville and Dutch Shell/central government in Ogoni land in Nigeria). Generally speaking, transformation triggers violence if discrimination against actors is immediately linked with specific events leading to the destabilization, if not dissolution, of the social order. The latter may be caused by the use of marginal land or by specific project-related activities which create “national sacrifice areas.” Therefore, conflict analysis has to focus on how political institutions operate, on how socioeconomic structures fall apart, and how traditional ways of living are at stake.

3.3. Target

Third, environmental concerns become a *target* of discriminated actors if transformation of the landscape is what the conflict is about—at least in the eyes of one of the actors. In many conflicts, sustainable resource use may be an ultimate goal of actors highly dependent on their natural capital. However, protecting one’s resources against the intervention of third parties often stands in the foreground.

A target usually encompasses different sub-goals not always internally consistent. Resisting foreign intrusion into one’s own environment also presents a dilemma to discriminated actors. On one hand, resistance pivots around the natural and cultural environment to safeguard against invasion of modernity; on the other hand, it turns back the threat of marginalization by participating in modernization and development. Thus, environmental concerns—first having been a target in and of itself—become a reason for pursuing new goals. As we have seen in some cases, the struggle for self-determination, autonomy, and secession becomes the main target putting the environmental concerns on a sidetrack. Central governments tend to react to the call for self-determination by upholding national sovereignty and territorial integrity, and, if necessary, by use of military force. Since discriminated actors perceive the use of military force further proof of centralization and delegitimization, the goal of self-determination is justified once more.

3.4. Channel

Fourth, environmental concerns only indirectly serve as a *channel*. A channel is a line of political, social, economic, or national cleavage. Channels thus are designed to shape the group identity by manipulating existing sociopolitical fault lines.

Even though a high level of environmental degradation in a certain area shapes threat perceptions, channeling moves the environment to the background as ongoing conflicts proceed. Once a conflict escalates to war, it will hardly be waged primarily over the original reason or the trigger of the conflict itself. In the hot conflict phase, hostile parties tend to grasp for fundamental legitimization patterns and ultimate goals. Slogans such as “to be or not to be” or “they” destroy “our” resources, are mobilizing channels more than “land scarcity” as such.

Nonetheless, at the same time group leaders fighting for autonomy or secession may promise a solution to environmental problems. If self-determination will be achieved—so the assumption goes—“we” will not act as irresponsibly as “they” did. War therefore is not waged directly to solve ecological problems even though they may be a reason or a trigger. Similarly, war does not occur in order to defend the traditional way of life against the “attacks” of modernization. War is often about self-determination and national sovereignty. Once this goal is achieved, then self-determination is supposed to contribute almost automatically to the realization of previously formulated ecological goals. This, however, almost always turns out to be a miscalculation.

In politicized identity conflicts and center-periphery disputes, environmental damage is used as a means to realize larger goals. Marginalized groups may conclude that they can only find coalition partners and international recognition if the environmental damage caused by them can be used for solidarity to realize a further goal (e.g., independence from a corrupt or nepotistic central government). Indeed this mobilizing strategy forms the basis of clearly perceptible and perhaps even dramatic environmental destruction. However, the environmental problem is overemphasized or taken selectively as factor from the large context and reinforces the attempts to shape identity (e.g., Ogoni in Nigeria or the Bougainvillean Revolutionary Army against the central government).

3.5 Catalyst

Fifth, in only a few cases, the transformation of landscape becomes a *catalyst* of conflict. However, sudden events, such as floods or cyclones may unexpectedly contribute to the further deterioration of renewables exacerbating food supply resources and therefore intensify on-going resource conflicts. The damming of water leading to acute down-stream scarcity or the severe pollution of fresh water resources also suddenly enhance tension between conflicting parties. Intentional actions carried out to deny access to resources leads to the environment being a catalyst. Moreover, if environment is designed to be a catalyst it may also be a valid instrument for channeling (e.g.,

Delta Region in Nigeria).

4. THE INTENSITY OF ENVIRONMENTAL CONFLICTS

Actors alone shoulder responsibility for triggering and supplying the motivation for violent conflict. A distinction must be made between the structural cause of a conflict and conflict dynamics or intensity. While environmental discrimination plays different roles in the causation of a conflict, its intensity does not depend on the degree of the physical and chemical degradation of the landscape. As pointed out earlier, no linear correlation exists between the quality or quantity of natural resources and the intensity of violence; many accelerating and inhibiting factors are present.

In disputes between the *center and periphery*, all-out wars are rather unlikely. This generalization applies especially for mining and dams. In such settings, escalation to war occurs only in exceptional cases (e.g., Bougainville and Chico). Violence is prevalent at relatively low levels with only a few fatalities. Center-periphery conflicts engender almost everyday endemic and diffuse violence by groups facing discrimination. But these groups hardly display organization toward developing “war parties” with clearly defined strategic goals. Conflicts often escalate in a spiral of violence if acts of sabotage prompt government troops to take punitive actions directed arbitrarily against communities and settlements. If escalation to violent conflict actually occurs in connection with large projects and accompanying ecological degradation, most of them remain below the war threshold. The conflict is often contained within the especially sensitive arena, such as a national sacrifice area, by the militarily superior center.

The greatest conflict potential lies in *ethno-politicized* conflict settings and in *inter-regional* or *demographically driven migration conflicts* in countries with poor state performance. The actors are as numerous as they are diverse: minorities versus majorities, tribes versus tribes, clans versus clans, native people versus immigrants, settlers versus nomads, nomads versus governments, subsistence farmers versus multinational concerns and central governments, unemployed versus the financially better-off, and rural classes versus the central government and nomenclatures. The diversity of the actors shows that two well-equipped armies with heavy weapons seldom face off against each other. Often, more or less motivated government troops see themselves confronted by lightly armed groups. Despite these trends, the danger of arming the marginalized groups should not be underestimated. Struggles for resources have historically been relatively confined and partially ritualized between various indigenous groups. But modern weaponry often brings about a more lethal level of dispute between opposing troops.

In individual ethnopolitical wars of medium and high intensity, resource degradation, competing land-use rights and tenure systems, population growth, ethno-social stratification, regionalism, and maldevelopment accumulate into an insoluble problem syndrome causing and/or triggering violent responses. A high intensity of violence with all its excesses ensues, touched off by war crimes, rape, massacres, and crimes against humanity including genocide (*e.g.*, Rwanda, Sudan).

In the foreseeable future, environmental conflict will not be a “world war” with a global front. A war between the United States and China to preserve the ozone layer, for example, would be absurd. Even classical inter-state wars—for instance between riparians of the same river basin—may remain an exceptional phenomenon due to intensified efforts concerning international agreements. However, in some cases, certain threat potential warrants careful monitoring (Middle East, Central Asia, Nile basin, and Mekong basin).

The growing problems of supplying agriculture, industry, and households with fresh water will become domestic problems. They will either be linked to conflicts due to the marginalization of rural poor or the creation of national sacrifice areas. Either way they are two sides of the same coin, namely environmental discrimination. Conflicts in marginalized ecoregions as well as in national sacrifice areas are by definition related to some clusters within states. Thus they fail to induce an overall conflict pattern affecting countries as a whole. More often central governments try hard to contain violence as much as possible within the area at stake. These attempts, if successful, lead to protracted low-intensity conflicts in focal areas. As a result, heterogeneity increases between highly productive rural farming arenas and efficient urban centers on one hand, and ecologically sensitive rural areas with low human development on the other. The front line between the two sectors becomes the more or less clear-cut fault line of ongoing conflicts. The same key factors lead to both further transformation of society-nature relationships as well as to violent conflicts: environmental discrimination, overuse of renewable resources by actors highly dependent on natural capital, unclear and competitive tenure systems and property rights, and political mobilization against poor state performance in marginal arenas.

4.5 Outlook

The analysis of causal links between environmental transformation and violence should help identify routes to early recognition of transformation conflicts and to successful conflict management once prevention has failed. It is obvious that conflict management dealing with the conflict dynamics alone cannot lead

to success. It gets stuck in a fight against symptoms if it does not adequately address resource management and thus structural pressure on the biophysical environment.

The concept of sustainability cannot blind us to the fact that there are economic and ecological reasons for the failure of modernization and industrialization strategies in developing and transitional societies. Sustainability suggests a unified horizon of development for all. Yet such development is an illusion when environmental discrimination is the dominant mechanism to regulate resource access. Sustainable development—regardless of how it is defined—makes no sense if central issues about development per se are left open. Such developments inevitably lead away from what would be sustainable living. How must institutions be designed to limit environmental conflicts in strongly heterogeneous and multiethnic societies? How can the necessary latitude for sustainable resource use be provided considering the conditions of the poor? Does sustainability freeze in place the existing gaps between development and maldevelopment? Where does the Brundtlandian contract between the generations lead if already unproductive small plots have to be further sub-divided to sizes not manageable within the next one or two generations? Where do next generations go if they find neither sustainable conditions in rural areas nor off-farm opportunities in other sectors? And finally, how can sustainable development be established under conditions of violent conflict and war in about half of all developing countries?

Questions offer direction for further thinking. In many areas, similar conflicts occur simultaneously with comparable causes, actors, and goals. The basic question therefore becomes, do these individual environmental conflicts foreshadow a larger socio-political disintegration process especially relevant for developing and transitional societies? If this is going to happen, there are two possible interpretations for the disintegration phenomenon and the further course it will take. Environmental conflicts are the tip of the iceberg—retreat skirmishes of an increasingly marginalized majority of rural dwellers inevitably maneuvered into a no-win situation. This would be the worst case. Or, in the best case, these conflicts are the harbingers of conflict formations that—in the long term—lead to the strengthening of rural populations. A prerequisite for this alternative would be the reduction of rural population through migration and concentration in provincial centers. The remaining parts might then be able to establish sustainable rural structures serving the local and regional centers.

In any case, there is ample evidence that future environmental conflicts and their intensification and geographical expansion can only be avoided, or at least mitigated, if and when peaceful problem-solving and resource management are successfully implemented.

ENDNOTES

¹ Most of the empirical studies referenced in this article are found in Baechler *et al.* (1996) as well as in Baechler/Spillmann (1996 II, III). Some others exist as draft papers only.

² "Environmental conflict" connotes environmentally caused violent conflict and wars. Concerning the definition of war, refer to the concept provided by Istvan Kende and further developed by Klaus-Jürgen Gantzel. War is an armed, violent mass conflict following a planned strategy, encompassing the following three constitutive qualitative criteria: 1) it must be a conflict with a minimum of continuity (months rather than days); 2) there have to be central organizations on both sides (this could also be a para-military or guerilla force); and 3) at least one of the war parties has to be a government with regular or at least government associated troops (Kende 1982:5; Gantzel 1987:33). Violent conflicts are organized armed struggles of some duration (more than a one-day upheaval) between two or more collective actors with political goals. Violent conflicts are below the threshold of war but have a strong tendency towards this escalating to war.

³ The individual authors of the case studies are not listed separately in the bibliography attached to this study. All authors with either (1996II) or (1996III) indicated in sections 1.1 to 1.7 are included in Baechler/Spillmann (1996II, III).

⁴ Poor state performance is a lack of state outputs regarding civil and political rights, welfare expenditure, livelihood security, resource management, income, and job creation. The state may not produce good outputs for two different reasons. Firstly, the decisions and actions of the state are correct in terms of publicly stated legitimate goals, but their impact is not strong enough to reach the goals. Secondly, the rulers, although proclaiming that the state enhances the public interest, may pursue ends that are actually in their own interest. Both reasons apply especially for regions outside the capital area. Adopted and modified from Lane/Ersson (1994: 82-83).

⁵ ENCOP conducted a case study dealing with the globalized conflict in French Polynesia concerning the nuclear tests carried out by the French government. The study addressed the environmental disruption through testing as well as the protests of indigenous population, liberation movement, and INGOs against the policy of the French and the intervention of the navy (Danielson 1993(manus.)).

⁶ From a social science perspective, cases are interesting only where environmental scarcity is a necessary factor. With the configurative case studies approach the distinction between contributing and necessary factors depends highly on subjective judgements. Therefore, biases were diminished through periodical discussions among the researchers that contributed different case studies to ENCOP. On the other hand, the development of a testable model will be necessary if one aims to falsify empirically the distinction between contributing and necessary variables.

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Appendix

Secrecy vs. the Need for Ecological Information: Challenges to Environmental Activism in Russia

by Thomas Jandl

NOWHERE IS THE CONNECTION BETWEEN ENVIRONMENTAL PROTECTION AND NATIONAL SECURITY CLEARER THAN IN THE case of weaponry as a polluter. Even within this category of environmental threats, there is a hierarchy. At the top, both in terms of environmental priorities and international security, are weapons of mass destruction. They represent not only classic environmental problems—health hazards and threats to species—but also create an obstacle to economic well-being. Plus, they tend to affect neighboring nations to the same degree as the country on whose soil they are produced or stored. Nuclear, biological, and chemical accidents are truly global polluters, through transportation of contaminants in ocean currents and in the atmosphere.

Both East and West are grappling with their Cold War legacies, and more specifically with the cost of safeguarding and storing nuclear waste. In the prevailing economic situation, the obstacles to dealing adequately with the Cold War heritage are even more significant for Russia than the West.

It is in this context that the Norwegian NGO, the Bellona Foundation, initiated its analysis of the Soviet Cold War legacy on and around the Kola peninsula. Two major reports—*Sources of Radioactive Contamination in Murmansk and Arkhangel'sk Counties*, and *The Russian Northern Fleet: Sources of Radioactive Contamination*—resulted from this effort. The reasons for focusing on this region are not solely environmental. Norway's interest in the Northern Fleet's nuclear legacy stems from the country's vicinity to the storage sites and is thus as much inspired by national security as by pure environmental concerns. This issue has transcended like few others the realms of classic environmental problems and related health hazards, moving into the fields of diplomacy and international security. Russia reacted strongly to Volume II of the report, arresting co-author Alexandr Nikitin.

This article will, through the Nikitin case, explore how an individual environmental organization ventured through the minefields of international security and diplomacy, forging obvious as well as unlikely alliances along the way. For environmental organizations, there are two lessons to be learned: One, the increased mixing of national security issues with environmental concerns makes it more dangerous to work in the field by widening the range of problems environmentalists can encounter. Two, environmental groups have to build relationships in a much wider range of areas than environmental policy alone. Bellona USA's fax list includes the state department, the national security community, the international affairs community in Congress, the congressional human rights caucus, and a group of opinion leaders in the areas of democratization and economic transformation from a planned to a market economy.

There is also a lesson to be learned for politicians and national security specialists. While the globalization of trade is hotly debated, the spreading of environmental problems into the commons—the oceans and the atmosphere—is well under way. The separation of these international environmental cases from international security policy, for semantic or ideological reasons, invariably comes back to haunt us. The earlier these problems are addressed in international negotiations, the better.

THE SCOPE OF THE PROBLEM

With the end of the Cold War, questions pertaining to the degradation of the global commons, transboundary pollution, and the depletion of resources of importance to neighboring nations have become more prevalent topics of international discussions than nuclear annihilation. Few debate the merits of this change in priorities. The probability of a nuclear strike against American soil is more remote than ever. By contrast, the risk of an

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environmentally disastrous accident as a consequence of Cold War activities is much higher than previously known—or admitted.

Environmental and national security concerns become most directly intertwined when the military and its activities and systems create the environmental hazard. The inadequate storage of nuclear weapons and other contaminated materials raises questions of how far secrecy in military affairs can legitimately be maintained.

A large amount of nuclear and chemical hazards

exists, in the form of actual weapon systems (warheads, bombs, mines, etc.), related items such as nuclear submarine reactors, and other contaminated materials. The U.S. Departments of Energy and Defense are wrestling with these problems, and more specifically the cost of decommissioning nuclear waste. The world's largest defense contractor, Lockheed Martin, is unable to fulfill its contract on agreements that require cleaning up a contaminated storage site in Idaho Falls. The cost vastly exceeds the 1994 estimates of \$179 million: for a single site of low-level materials, cost estimates now

A CHRONOLOGY OF THE NIKITIN CASE

5 October 1995: The FSB, Russia's federal police, raids the Bellona office in Murmansk and confiscates all research materials. Bellona employee Alexandr Nikitin is questioned.

5 December 1995: The Ministry of Defense forms an expert committee to evaluate information in the Bellona report with respect to state secrets revealed therein. The committee declares it is not competent to evaluate the sources for the information.

6 February 1996: Alexandr Nikitin is arrested by the FSB and accused of espionage for his work on the Bellona Foundation's report on *The Russian Northern Fleet: Sources of Radioactive Contamination*, an environmental document about radioactive waste in Northwest Russia.

27 March 1996: The Constitutional Court rules that Nikitin's attorney does not have to request security clearance as suggested by the FSB.

11 April 1996: Nikitin is indicted, but the text of the indictment remains classified.

24 June 1996: The Ministry of Defense forms a second committee. The results mirror the findings of the first. The Ministry of Atomic Energy sets up a committee. This committee finds no state secrets in the Bellona report. The Ministry of the Defense Industry forms a committee, which finds it is not competent to respond to the questions posed by the FSB.

17 July 1996: The Environment Committee of St. Petersburg concludes the report has no relevance to environmental problems in the region.

August 1996: Amnesty International adopts Nikitin as the first prisoner of conscience since Andrei Sakharov. The International Helsinki Committee sets up a Nikitin commission. The UNHCR reviews the Nikitin case.

17 September 1996: A Ministry of Defense committee finds that the damages caused by Nikitin are \$1 million.

30 September 1996: The FSB bases its charges against Nikitin on secret Defense Ministry decrees. The Russian Constitution holds that no citizen may be charged with laws that have not been duly published.

10 October 1996: Bellona employees are denied visas to Russia to prevent participation in the defense of Nikitin.

19 October 1996: The Bellona report is banned in Russia; the first book to be banned in the post-Soviet era.

11 December 1996: The Deputy Director General of Public Prosecution orders Nikitin's release from pretrial detention.

14 December 1996: The FSB falsely claims the case was already in court and Nikitin cannot be released. The Prosecutor's office insists. Nikitin is released.

10 February 1997: The Council of Europe begins to investigate the human rights violations in the Nikitin case.

23 April 1997: Another Ministry of Defense committee is formed. No conclusions yet.

9 September 1997: The FSB files final charges based on secret decrees and laws that entered into force when Nikitin was in pretrial detention. The FSB removes files documenting the false information given to the Procurator on 14 December 1996, but is later ordered to restore them.

12 November 1997: The FSB's chief investigator in the Nikitin case, Boris Utkin, is dismissed and replaced.

28 November 1997: Nikitin holds a press conference in Moscow. This marks the first time Nikitin is allowed to leave his internal exile in St. Petersburg since his arrest.

24 January 1998: The FSB presents Nikitin with a new set of charges; the sixth since the beginning of the case. Although based on one additional decree, the entire accusation is still based on secret and partly retroactive decrees issued by the Ministry of Defense.

5 March 1998: Twenty-two members of Congress urge Vice President Gore to raise the Nikitin case with Russian Prime Minister Chernomyrdin during the Gore-Chernomyrdin meeting in Washington. This is the third congressional letter on behalf of Nikitin sponsored by Rep. David Skaggs (D-Colo.).

10 April 1998: Procurator General Yuriy Skuratov extends the investigation into the Nikitin case for an unspecified time.

are in the \$600 million range (Mintz, 1997).

The American experience offers a good indicator about the challenges in Russia, where the government has to deal with an even larger number of submarines, bombers, and missiles than the Pentagon and DoE. In addition, Russia's economy is in transition. Even the most optimistic assessments do not suggest that Russia will be able to pump as much money into its cleanup program as the United States. At present, Russia falls far short of funding even the most basic needs. In the immediate future, it is clear that the cost of a reasonably safe cleanup of Russia's nuclear waste must be underwritten by the international community.

To increase the world's interest in confronting this "Russian" problem, the Bellona Foundation initiated its analysis of the Soviet Cold War legacy on and around the Kola peninsula. In 1994 and 1996, Bellona published two volumes of a report on nuclear contamination in northwestern Russia (Nilsen & Boehmer, 1994; Nilsen, Nikitin & Kudrik, 1996). The reasons for focusing on this region are not primarily environmental; Norway's interest in the Northern Fleet's nuclear legacy stems as much from the security aspect of the problem as from pure environmentalism.

So far, the Russian Northern Fleet has taken out of operation approximately 130 nuclear submarines. Approximately 150 more will follow within the next half decade under the second part of the Strategic Arms Reduction Treaty (START II). A total of 18 percent of all nuclear reactors in the world are located on the Kola Peninsula, giving the area the distinction of accommodating the highest concentration of nuclear materials worldwide. Solid radioactive waste is stored in eleven facilities along the Kola coast. All are full, and at several sites waste is stored openly in drums or containers without any protection against the elements or theft. There is no intermediate or permanent storage site in the area. In fact, all waste is supposed to be shipped to the Mayak reprocessing plant in Siberia. At the rate the trains are going, the transportation of the existing waste would take more than fifteen years, without even taking into account the newly decommissioned submarines that will add to the nuclear wastepile over the next years. In addition, the Mayak plant is not capable of accommodating all the waste, and would be overwhelmed if all the material supposed to be reprocessed were really to arrive. The abysmal state of the rail system makes it highly unlikely that all the waste will go through Mayak.

In addition to the solid nuclear materials, liquid waste is stored in unguarded concrete containers. Since the 1997 federal budget for the first time did not include money for container maintenance, Russian experts have publicly stated that winter frost will cause already existing cracks to widen and cause leakage of low-level radioactivity next spring (Nilsen, 1997). The government's response was to tighten laws on state

Environmental and national security concerns become most directly intertwined when the military and its activities and systems create the environmental hazard. The inadequate storage of nuclear weapons and other contaminated materials raises questions of how far secrecy in military affairs can legitimately be maintained.

secrecy. Scientists who want to measure radioactivity around these containers next spring will do so at the risk of being accused of espionage and treason.

To exacerbate the problem, only 35 percent of all funding for the Northern Fleet's nuclear safeguard work was actually allocated to the navy. Most of the money was used to cover salaries and pensions. Bills go unpaid for long periods of time. At one point, a storage facility commander had to send an armed platoon to an electric power plant to restore at gunpoint the power supply for the essential cooling systems. The facility had not paid its electricity bills (Jandl, 1995). The director of the Atomic Icebreaker Fleet in Murmansk, who is also responsible for some of the on-board storage of radioactive waste, calls the storage policy of the Northern Fleet "fraught with disaster" (Roukcha, 1997). Policymakers must therefore think of the implications of a START III treaty where more submarines were taken off line without assuring proper funding of the cleanup after dismantlement.

With all the makeshift storage facilities along the coast of the Barents Sea, within a 100-mile radius of the Norwegian and Finnish borders, environmental risks are inevitable to Russia's neighbors as well. An accident will have catastrophic consequences not only for hundreds of thousands of Russians, but also for those in neighboring states. In addition, any accident will impact the Barents fishing grounds, and, through water streams and ice movements, can potentially transport radioactive particles all across the Arctic to places as far away as Alaska. The issue has thus transcended, like few other environmental matters, the realms of classic environmental protection and related health hazards, diplomacy, and international security. The questions come down to these: how much access to military facilities can an international organization demand in the name of global interests? And if the West funds the cleanup effort, doesn't the West have a right to see what its money is funding?

The Russian reaction to Volume II of the Bellona

report has added an unintended fourth realm: human rights and democracy. Russian security police arrested one of the contributors to the report for alleged national security breaches. Since that time, Bellona has forged alliances with groups not traditionally known for environmental work, such as Amnesty International and Human Rights Watch. Similarly, traditional environmental groups have added human rights to their line of work, as exemplified by the Sierra Club's Human Rights program and, albeit not by choice, Bellona through the defense of its employee, Alexandr Nikitin.

THE SWING OF THE PENDULUM

In the period of 1989 to 1991, Russia was in a state of euphoria. Everyone wanted to talk to westerners, journalists, scientists, or environmentalists. After decades of secrecy decreed by the authoritarian communist regime, the door had opened and the tides of change seemed to sweep a country eager to catch up on interaction with like-minded foreigners.

Between 1991 and 1994, Russia knew no rules. The old order was dead, and nobody had bothered to replace it with a new one. Not surprisingly, the remnants of the old days tried to hold on. After 1994, the old guard had reorganized itself sufficiently to clamp down on the new-found liberties. The Federal Security Service (FSB) interviewed Bellona's Igor Kudrik about his work on the problems stemming from the storage of nuclear fuel from the Northern Fleet's submarines in the Kola region. At first, there were no allegations about telling state secrets, only questions of loyalty and nationalism. Why would a son of Russia work with foreigners? Not coincidentally, the only Bellona employees ever harassed by the FSB are the two Russian nationals on the staff, Kudrik and Nikitin. Kudrik had to leave Russia and now works for Bellona in Norway.

At that time, the FSB paid visits to numerous activists. On one occasion, the office of the newspaper *Moscow News* was ransacked after the paper published the research of Vil Mirzoyanov, a scientist, on chemical weaponry. Russia had just signed the chemical weapons convention. Mirzoyanov got off easily. There was no written law on state secrets at that time, and *Moscow News* was an influential paper. Nevertheless, after the incident Mirzoyanov decided to move to the United States. But Bellona bore the brunt of the security apparatus' wrath, maybe because Nikitin's "betrayal" of the motherland weighed heavier due to his military past. He was a former navy captain. In 1995, a state secrecy law was passed, and in 1997, the law was amended to give the FSB sweeping powers to decide, without proper judicial review, what information on nuclear weapons and nuclear storage and safety, should be deemed secret.

The pendulum had swung full circle from Soviet authoritarianism to quasi-libertarian freedoms of in-

formation to post-Soviet restrictions on information whose publicity is explicitly protected in the Constitution. Bellona got caught somewhere in the middle, after having worked in Russia throughout the post-communist era.

Bellona learned many valuable lessons in the course of this case. The key ones are discussed below. For small environmental groups as well as grassroots activists in Russia, the key question is, how can one continue the work without the support of a western group with relatively deep pockets and international friends? The obstacles and opponents appear overwhelming. Based on the Nikitin experience, Bellona will set up an Environmental Rights Center in St. Petersburg. A joint venture with the Russian civil rights group, Citizens' Watch, the Center will support Russian environmentalists with legal problems, and also serve as a clearinghouse for contacting like-minded international groups and activists as well as the funding community. Small groups with niche issues are important, but they cannot survive in a perilous environment. They need, just as Bellona did in the Nikitin case, coalitions and support groups to stand up to an overpowering state security apparatus.

LESSON ONE: IT'S ALL POLITICS NOW

The environment once presented a less contentious area where the military superpowers could seek cooperation, but it is now increasingly the realm of diplomatic, political, and even military players. With the demise of their Cold War patrons in the East or West, smaller nations have fewer geopolitical restraints against going to war with one other. The same is true for internal strife. Resource scarcity is considered by some to be a contributory cause of displacement of millions of people and subsequent armed conflict. NGOs, such as the World Resources Institute, study the connection between resource availability, migration and conflict. Universities have opened departments for similar research. One of the first and best-known environment and security researchers, Thomas Homer-Dixon, drove home the point of the interplay of these fields in an interview in 1995—less by what he said than where he said it: he appeared in *Defense News*, one of the defense industry trade papers (Homer-Dixon, 1995).

While resource scarcity could be identified as an economic issue traditionally related to national security, Bellona's work in Russia is based on pollution, albeit pollution stemming from military nuclear reactors. Hence, the lesson could be simple: stay away from military issues and you are safe. Two problems become evident, however. First, the military nuclear complex represents an enormous environmental hazard, both in NATO and in the former Warsaw Pact nations. Simply declaring it off-limits to inspection and criticism

would create an unacceptable national security risk for populations in the nuclear countries themselves, as well as in nations in close range of a nuclear storage facility or weapons production site. Second, the new Russian law on state secrets is so broadly worded that, in theory, activists or NGOs could be accused of breaching national security laws if they simply measure the radiation levels around civilian "nuclear power installations and special physical installations which have significance for defense" (Law on State Secrets, 1993). While Russia, of course, has a right to protect its national security, this definition of security infringes on other countries' own environmental safety and, given the power of the atom, touches on global security concerns. Furthermore, the law directly contradicts the Russian Constitution, which states that no condition endangering the health of the population can be kept secret.

The Russian side claims that the broad wording of the state secrecy laws allows all sorts of existing international cooperation projects to continue. Indeed, these laws are not aimed at U.S. military officials who help their Russian counterparts comply with arms control treaties, such as START. State secrecy restrictions will probably not be invoked against Pentagon officials who bring millions of dollars in Cooperative Threat Reduction money, better known as Nunn-Lugar funding (*Post-Soviet Nuclear & Defense Monitor*, 1997). These restrictions will not stop the work that the Russian side is interested in pursuing. But they will put a hold on private watchdog groups and individuals in research facilities who, through their work, try to make their power plant, town, oblast, or country a better place to live. And the restrictions might be used as a means of applying pressure on foreign officials when disputes arise during the implementation of a cooperative project.

Bellona has a large number of friends in the Kola region, mostly researchers and academics who used Bellona's help to continue their important work. In turn, they helped Bellona to gather information for the first systematic analysis of nuclear waste in the area and its storage conditions. These researchers and activists are now put in a situation of legal limbo. They no longer know for sure what they can do and what could land them in jail.

Alexandr Nikitin was the first to be targeted for going too far. Bellona, as his employer, supports Nikitin's claim that he broke no law. Bellona has, in cooperation with Nikitin's legal team, prepared documentation to show that his activities are fully covered by common law and the constitution, which spells out unambiguously that all information pertaining to severe public health risks cannot be kept secret, and that every citizen with knowledge about such hazards must bring them to the public's attention (Gauslaa, 1996, Gauslaa, 1997). But Nikitin learned about these risks as a navy captain. By speaking out, he broke the

military's *omerta*, similar to the Mafia's unwritten code that you never criticize your own, whatever the consequences.

LESSON TWO: FORMING NEW COALITIONS

The "military secrets" Bellona's report revealed were the storage conditions of old, decommissioned submarine reactors and spent nuclear fuel of a generation of years past. It is difficult to believe Russia feels threatened by revelations of this kind. In fact, the nuclear materials as analyzed in the Northern Fleet report are of so little importance to the nation's defense that Russia is trying hard to get rid of them, but cannot afford to do so. Clearly, the driving force behind the obstinate FSB prosecution of Nikitin is elsewhere. Indeed, one military source told a western expert traveling in Russia that the Northern Fleet does not have a problem with Bellona's work. Its issue lies with Nikitin and it is personal.

While the navy may want to punish a whistleblower, the FSB has more rational motivations. Briefly disbanded in the new Russia, the KGB was revived as the FSB, with the goals to fight organized crime, prevent terrorism, and perform counter-espionage functions. The Russian mafia has proven to be beyond the FSB's reach. Chechnya has hurt its reputation as an anti-terrorism force. It needed a success on the espionage front. The navy's angry reaction to Nikitin's role in the Bellona report was an opening. In two years of investigations, the FSB has not been very successful in bringing to light illegal behavior. But too many participants in this legal drama have staked their careers on the Nikitin case to let it go. So they delay, in the knowledge that going to court with the evidence that is available would lead to certain defeat. When Procurator General Skuratov dismissed the chief investigator, Boris Utkin, and replaced him with an official with no prior participation in the case, he took the first step towards a fair review. Only an investigative team with no personal stake in a conviction can bring this case to an end.

The case has even wider implications than Alexandr Nikitin's personal fate. The FSB's activities mirror the behavior of security forces in many nations in their interaction with inconvenient opposition groups. The environment is often a point of contention between those in power and those without power. Grassroots action starts most frequently over issues of vital importance, such as the use of land in a subsistence community, or a parent's fight against unsafe nuclear storage which threatens a child's future.

Of course, aside from these merely personal issues, there are also philosophical questions pertaining to democracy, the rule of law, and basic human rights. The Nikitin case touches on all of these. It is thus not surprising that throughout the fight for a fair trial or a dismissal, Nikitin and Bellona have worked with many

non-environmental constituencies. Bellona has talked to many a U.S. senator or representative with no love lost for the environmental movement. *Dear Colleague* letters circulated in the House and Senate received wide bipartisan support, and no clear ideological current is discernible among the signatories. Senator Ted Stevens (R-Alaska) is as supportive as Senator Ted Kennedy (D-Mass.)—two gentlemen undoubtedly on the opposing ends of the political spectrum. In the House, defense hawk Representative Curt Weldon (R-Pa.) has helped as much as environmentalist Representative David Skaggs (D-Colo.). Vice President Al Gore has taken up the Nikitin case in private with then Russian Prime Minister Viktor Chernomyrdin, while Canadian Prime Minister Jean Chretien has done so in public.

Everything is in a name. Bellona showed good political instinct when the organization—despite the founders' wild days as youth activists—embarked on a pragmatic path, building coalitions rather than shocking and alienating. The group is committed to environmental protection and unashamed of calling itself an environmental organization. But by addressing environmental protection in a scientific way, Bellona has gained a reputation that allows its staff to talk to politicians who would not normally interact with most other environmental organizations. Greenpeace, just to name one, has done important work in bringing environmental concerns to the attention of a mass audience. Greenpeace also performs a wide range of serious academic research on environmental issues. Nevertheless, its reputation is one of sensationalism, regardless of the merits of a specific report or campaign. In the Nikitin case, Bellona has managed to paint a picture of general, international political interest over the green background upon which it operates. Broad support was easier to obtain on such a foundation.

Amnesty International has adopted Nikitin as a prisoner of conscience, and Human Rights Watch is working the case from its Moscow office. The Sierra Club's human rights campaign is working hard on the issue, and democracy groups and former dissidents support Nikitin from within Russia. Many de facto U.S. officials support Bellona by taking the banned Northern Fleet report to Russia or using its analysis and numbers in their argumentation. The report is the first and only book to be banned in post-communist Russia. Prominent Russians, like former Yeltsin science adviser Alexey Yablokov, are openly supportive of Nikitin and Bellona.

No environmental group can take on the Russian security apparatus. This is why environmental organizations will have to forge alliances with other organizations to increase their leverage. Bellona's cooperation with a host of human rights advocates, supporters of democratization and economic conversion in Russia, and international relations experts, is an early model of this new coalition. It has been made neces-

sary by the move of environmental issues into the dangerous politico-military realm. And, NGOs remain small and relatively powerless vis-à-vis a totalitarian system. Russia appears to have turned the tide towards a democracy and the government is not indifferent to criticism. But the Nikitin case is only the beginning.

MONEY TALKS

To break the indifference some nations exhibit to political pressure, or to improve the effectiveness of lobbying from the NGO side, coalitions should include players from outside the field of talkers and thinkers. Money talks, and most authoritarian regimes stay in power because it is financially attractive for the despots. Nigeria is a case in point. The military regime would not hold on if the oil revenues did not go right into the elite's pockets. When environmental activist Ken Saro-Wiwa was sentenced to death, he received support from the highest political and moral dignitaries around the globe. Nevertheless, Saro-Wiwa was hanged. It is more likely that Nigeria would have let Saro-Wiwa go if Shell's president Cornelius Herkstroter had made his company's financial support of the Nigerian government contingent upon adherence to basic human rights.

Bellona therefore works with industry to create a coalition between a public policy goal on the one hand—environmental protection and nuclear safety—and financial interests on the other. The cleanup needs in northwestern Russia are enormous and Western companies should get a large share of contracts due to their know-how and technologies. The delay now is political. How can the U.S. and European governments overcome differences over work share and supervisory authority; how can the West's concerns over liability in case of an accident be taken into account; how can funding be made available in a climate of increasing skepticism towards foreign aid? Bellona and other NGOs will tell lawmakers why this issue is important to national security. Industry will be better in convincing a congressional representative that cleanup funding for nuclear storage sites in Russia is not a waste of money. American technology exports are creating jobs at home, while at the same time making the world a safer place to live—both in terms of disarmament and the environment.

Companies like Lockheed Martin, Westinghouse, General Electric, and Babcock and Wilcox are the best lobbyists for the economic message in the United States. Furthermore, they possess more financial resources and have fewer restrictions than NGOs when lobbying Congress. French, British, Norwegian, and Swedish nuclear cleanup companies are focusing on the business opportunities presented by the Russian storage mess. On this issue at least, environmentalists and businesses are natural allies. Should environmentalists go

to bed with the "enemy" called the nuclear industry? Business is pragmatic enough to work with NGOs that in past times have chided the industry for its practices. Environmentalists should be pragmatic enough to work with business when the environmental bottom line shows a change for the better. That does not mean that environmental NGOs should look the other way over abuses by their new partners elsewhere. It just means that where interests overlap, environmentalists should stretch out their hands. When interests clash, NGOs will speak up as always.

Ideology is dead. Pragmatism is in. Bellona has pursued the art of pragmatic environmentalism in its industry partnership program. Companies sponsor one Bellona program, while Bellona sues them in another. But why not? Defense contractors sue the Pentagon with great regularity, just to see the program managers they had just denounced as incompetent award them yet another billion-dollar contract. Bellona's approach of cooperation may not be suitable for every environmental organization, but all parties with interest in international work will inevitably have to find innovative solutions to doing business.

THE FUTURE HAS ARRIVED, LIKE IT OR NOT

Globalization is well under way. For the environmentalists, that means that if we do not change our ways of operating, we will be left in the cold. This journal will receive submissions on the global impact of CO₂ emissions reductions. There will be discussions on the exploitation of the oceans, and eventually about the use of resources in space. Every issue related to resource use will increasingly be defined in terms of national security. Trade and access to markets and resources will rapidly replace military influence and ideological infighting.

This being said, it is anachronistic that many politicians still do not understand the importance of a pragmatic approach to issues of global reach. Ideology appears to be the driver in an amendment to the successful Nunn-Lugar Cooperative Threat Reduction program, prohibiting funding of environmental projects. To be sure, Nunn-Lugar is a disarmament program. Yet, nobody asked for money to plant flowers. On the other hand, one potential catastrophe replaces another if nuclear submarines are decommissioned with U.S. money, but no funds can be spent on the final storage of the spent nuclear fuel from those subs.

Funding nuclear cleanup is good business in America. The nuclear industry in the United States had to survive without a domestic nuclear power plant order for two decades. Contracts will be commissioned for cleaning up and safeguarding nuclear sites. U.S. companies have made large investments and want to recoup their money. Russia is a vast market, but Russia cannot pay. Eventually the West will pick up the

tab, at the latest when the first irradiated fish are found in Alaska. This debate is reminiscent of the one that surrounds health care. Prevention is cheaper than the cure. Politicians and the public would prefer not to pay the cost of the cleanup. But eventually we will have to. The earlier we do it, the cheaper it will be and the less damage will be done in the process.

There is an additional benefit. Some Russian companies are indeed quite good at what they are doing, and they do it for much less than their Western counterparts. In one project currently under consideration, the Western partners would transfer technology to their Russian joint venture company. The Russians would produce nuclear waste storage casks for use in the Kola region. If the project works well, these casks could be used in the U.S. cleanup program as well, a mutual benefit for the Russian and American partners.

The Clinton administration, in general friendly to the idea of environmental cleanup, has not managed to prioritize the environmental legacy of the Cold War. Ken Luongo, former advisor for nonproliferation policy to Secretary of Energy Hazel O'Leary and director of the DoE Office of Arms Control and Nonproliferation, stated that "[w]hile Presidents Bill Clinton and Boris Yeltsin would publicly announce their common aims, achievement of those goals was hampered by bureaucratic staff on both sides who still harbored misgivings about the other's intentions." Luongo also blamed Congress and the administration for their "perceptions of the cooperative programs as foreign aid rather than as an investment in U.S. security." He said that the United States needed "a cabinet secretary that cares. Secretaries Albright, Cohen, or Peña need to take on this issue [of nuclear safeguards] as their own. Only then will the bureaucracy move. We've been lulled into a false sense of security because people think we've accomplished much more than we have" (Luongo, 1997).

Potential problems need to be addressed in the early stages of a project. As mentioned above, the Cold War did not leave the developers of nuclear weapons much time to ponder the environmental consequences of their work. But today, the world is safe enough to take a minute to reflect and think issues through. START III, the next round of the Strategic Arms Reduction Treaty, needs to include provisions for dealing with the dangerous side effects of the disarmament process. There are many. Proliferation and safe storage are top priorities, but experts in different fields will add to the list. If the biggest threat to the safe storage of dismantled nuclear weapons is the social situation in Russia, then it must be in the purview of START III to address issues such as unpaid salaries for those who guard storage facilities. If environmental considerations turn out to be of importance, as most experts are convinced they will, resources must be made available to deal with them. What will history say about those who in the

name of Cooperative Threat Reduction created one threat from another, spending billions of taxpayer dollars in the process?

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Forest Plunder in Southeast Asia: An Environmental Security Nexus in Burma and Cambodia

by Kirk Talbott and Melissa Brown

A REGIONAL PERSPECTIVE

GEOGRAPHIC ENORMITY, POLITICAL AND ECONOMIC COMPLEXITY, AND BIOLOGICAL DIVERSITY HELP DEFINE THE ASIA and Pacific theater. Population pressures, ecological degradation and depletion, and the accelerated demand for water, timber, minerals, agricultural land, fisheries, and other natural resources are sending shock waves across remote stretches of the Pacific and upland frontiers of Asia. The root causes of the threats to much of Asia's biological diversity, particularly in the region's more unstable and authoritarian countries, can be generalized in three words: conversion, consumption and corruption. Natural resources are threatened more than ever before as a result of the process of conversion of natural resources into other forms of economic capital. Southeast Asia is experiencing an unprecedented appetite for wood, wildlife, and other natural resource products and services. Local communities are caught in the conundrum of depending on natural resources while being largely marginalized from the politics and practices, often illegal and predatory, of governments and extractive industries that profoundly impact the local resource bases.

In many areas of Southeast Asia, natural resource depletion is reaching critical proportions. The rapid deterioration and loss of much of Asia's forest, soil, water, and other natural resources is balanced, in part, by the rise in many national economic and social development indicators. However, the region's natural resource intensive economies are fraught with consequences that, regardless of potential economic benefits, transcend conventional economic forecasts and unidimensional international and national security thinking and policymaking.

An ominous example of this is the 1997 Indonesian forest fires. Burning has been a common method of clearing forestland across the Tropics. Until 1997, a particularly dry year due to El Niño, the economic benefits of forest burning were seen by many as outweighing the environmental and social consequences. However, the downturn of the Indonesian economy accentuated the deep-rooted problems with an economy based on growth fueled by the accelerated conversion of natural resource assets and a political system with little accountability. It has been estimated that the effect of these fires in the worst hit areas is the equivalent of each man, woman, and child smoking four packs of cigarettes a day. Approximately 20 million people were affected by the smoke created in large part by many well-connected companies that were converting Indonesia's forestlands into agricultural plantations. This juxtaposition of environmental, socio-economic, and political dilemmas is increasingly indicative of a trend throughout the region.

Theoretically, at least, those countries with abundant natural resources can spark development and new forms of investment using large-scale natural resource extraction. Ideally, as natural resources are converted into new capital, the resulting investment and wealth can lead to socio-economic progress and possibly political stability. However, within the context of Southeast Asia's developing economies, income from the capture of natural resources capital conversion does not often flow to official government coffers or local communities.

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The private wealth amassed by political and economic elites breeds corruption and undermines both long-term regional development and the prospects for stable, civil societies as evidenced by the 1997-98 financial crisis rocking Asian economics.

This trend does not bode well for the environment. The fundamental structures of civil society—such as an independent judiciary system, political accountability, good governance, and effective and equitable enforcement of the law of the land—are critical to the sustainable management of countries' natural resources.

The transformation of predominantly rural societies to urban ones has led to dramatic demographic and social changes. Negative human health effects and other impacts of pollution generated largely by industrialization and resource conversion have both high economic and social costs, as demonstrated by the thickness of smog and scarcity of potable water in many areas of the region. The horrendous traffic congestion besetting Jakarta, Bangkok, and Manila is emblematic of these negative costs. Deforestation in the Philippines, Thailand, and Vietnam has led to massive erosion and flooding in several large watersheds. Thousands have died as a direct result of those floods; this number is increased by the spread of disease that results from the rising waters. In addition, deforestation negatively impacts agriculture productivity and fisheries as well as the ecological integrity of watersheds across the region.

The rising environmental costs associated with rapid, unplanned development and subsequent economic troubles of the wealthier Southeast Asian economies might serve as a harbinger against ecological abuse. The lowest income countries in this group of nations, such as Laos, Papua New Guinea, Cambodia, and Burma¹ are economically undeveloped but richly endowed with natural resources such as forests, minerals, and agricultural products. Not coincidentally, the remaining forest stocks in mainland Southeast Asia exist primarily in the poorer countries of the region. However, recent trends indicate that these struggling countries are not only repeating the detrimental behavior of their neighbors, but they are also often doing so to the benefit of and with the support of those countries that have already depleted their own resources beyond recovery. Malaysian, Indonesian, Thai, and Chinese logging companies are among the most active in the current logging plunder in Cambodia, Papua New Guinea, and elsewhere. Burma and Laos are reportedly experiencing rapid deforestation in several regions of the country. However, in these still relatively heavily forested countries, logging rates and patterns are difficult to assess primarily due to the mixture of military involvement in logging and physical isolation.

CAMBODIA AND BURMA

Two institutional biodiversity analyses, the World Resources Institute's *Last Frontier Forests Report*, and Conservation International's *Global Biodiversity Hotspots Analysis*, rank Cambodia and Burma among the top priority countries in mainland Southeast Asia. At the 1992 U.N. Earth Summit in Rio de Janeiro, Cambodia was designated as a potential 'green lung' for the region due to its extraordinary forest cover. At the same time, approximately one half of mainland Southeast Asia's remaining forest is in Burma. The exceptional variety of the Burmese forests supports biodiversity that is close to unparalleled and is home to a range of endangered animal and plant species.

Yet, in both Cambodia and Burma, large tracts of priority conservation areas are being lost every year to the ruling elites. Business arrangements between conflicting groups in both countries have been forged in order to further the gains of the logging industries. These cease-fire arrangements allow hostile political factions to maintain their military capacities and control substantial portions of their former territories, resulting in the plunder of many of the countries' remaining stands of forests. These logging deals undermine good governance and violate market principles and economic policies that promote the development of civil society. They perpetuate and exacerbate the underlying corruption and potential for conflict that already exists at egregious levels in Cambodia and Burma.

In these situations, conflict between countries and between antagonistic forces within countries can be reduced, in part, by the convergence of economic interests from various controlling government, military, and business groups. In Cambodia, Burma and elsewhere in the region, immediate conflict has been reduced as trees were being taken down and profits generated. Competing parties cooperate to extract, process, and trade in valuable timber. Each group thereby maximizes its income from plunder-based enterprises. Nonetheless, these agreements are, for the most part, short-term anomalies in a longer-term state of conflict that often transcends national borders.

While neither Cambodia nor Burma is in danger of losing their forests in the next few years, current regional conditions are leading to a disturbing trend in widespread, environmentally and socially destructive, forest decline. The likely permanent damage to the biodiverse-rich remaining forests of these countries is a potential environmental crisis in the making. In addition, the political and social tensions unleashed by the vast accumulation of wealth generated by a few, through illegal and rampant resource extraction at the expense of many, has high political and regional security costs.

The following sections detail some of the important issues in Cambodia and Burma as they pertain to the spiral of conversion, consumption and corruption

that defines the environmental security nexus in the region.

CAMBODIA

The rate of logging throughout Cambodian history belies the conflict of the times. In the late 1980s, a series of agreements was reached between Hun Sen's communist regime, the Khmer Rouge (KR), the Thai military, and private entrepreneurs that led to a dramatic increase in the rate of deforestation. These adversaries have cooperated for years in virtual battle zones on logging, gem mining, and trade in spite of ongoing warfare. Political convictions and ideological differences have been muted by a joint effort to pillage the forests for wealth. Illegal logging, in conjunction with prostitution and heroine trafficking, is the basis for shadow economies throughout Cambodia. The derived revenues are used not only as financial backing for political causes, but also for building the private wealth of the elite, assuring the cooperation of officials, and maintaining personal armies.

In 1991, with the signing of the Paris peace accords, Cambodia emerged from almost two decades of international isolation. Vietnam removed its forces. The UN helped to establish an interim governing body, the Supreme National Council (SNC), in preparation for democratic elections to be held in 1993. With the agreements, Thailand, Vietnam, and other neighboring countries were able to engage freely and legitimately in business associations focused on the extraction of Cambodia's natural resources.

The upcoming 1993 elections proved to be another bane for Cambodia's forests. In June 1992, the *Far Eastern Economic Review* commented, "Past ravages may pale alongside the full-fledged attack on the forests now planned by the country's four once-warring actions... [each of which]...needs funds to prepare for next May's election of a national government, and the forests provide an easy answer."²

In September of that same year, the SNC issued a moratorium on log exports. As of 1 January 1993, only sawn timber would be legal for export. The resulting logging frenzy caused one Thai businessman to comment "they are chopping away like mad."³ One high-ranking diplomat explained the serious commercial nature of the situation. "This is not ideology. This is money in the pocket. They [the Khmer Rouge, the central government, and military leaders] have got cooperative arrangements."⁴

In 1993, the Royalist United National Front for an Independent, Neutral, Peaceful and Cooperative Cambodia (FUNCINPEC) party won the first free elections. Despite a proposal for a coalition government of national reconciliation that would include it, the KR protested with armed resistance. The estimates of the logging revenue generated by the KR in 1993 were between \$10 and \$20 million per month.⁵ Later that year, the

government declared itself to be a hereditary monarchy, the Royal Government of Cambodia (RGC). Prince Ranariddah, King Sihanouk's son, became First Prime Minister and Hun Sen, Second Prime Minister.

The KR continued to be a major beneficiary of logging revenue until 1996. Even as recently as July 1997, factions of the KR were still in control of lucrative sections of Cambodian forest along the Thai border. For years Hun Sen had been officially denouncing Pol Pot's insurrections, while at the same time covertly sanctioning the actions of the KR by allowing their logging to continue. The Cambodian military had been supporting private sector forestry in many of its military zones, not excluding areas set aside for "wildlife refuges." The Cambodian army, navy, and air force have all been facilitators in both logging and trade. The logging in the areas in which the KR has been active is, like most other regions, controlled by the Cambodian military.

In late June 1997 Pol Pot was captured by Khmer Rouge troops as part of an internal leadership struggle.⁶ His arrest appeared to many to be a harbinger of peace and potentially democracy for Cambodia. However, on July 7, 1997 Hun Sen, as the leader of the Cambodian's People's Party (CPP), violently ousted his co-Prime Minister, Prince Ranariddah. Prior to the coup, Global Witness, a British investigative non-governmental organization, issued a document stating that despite the regulatory efforts of the RGC, the co-Prime Ministers had complete control over the logging industry, legal and illegal. Official timber revenues from January 1996 to April 1997 totaled over \$14 million. During that same time, the UN estimated that a minimum of \$116,646,830 of logs and sawn wood were illegally traded.⁷ Hun Sen's July, 1997 coup marked an abrupt change in the cooperation between the warring factions. Following the coup, Hun Sen's forces purportedly began torturing and killing officials of FUNCINPEC. When UN officials publicized this, Hun Sen called for the removal of the UN staff, and demanded an official apology.

The violent and tumultuous circumstances that have been consistent throughout Cambodia's recent history make it difficult to discern the actual arrangements between participants in the logging industry. However, it is clear that Hun Sen's Cambodia's Peoples Party (CPP), FUNCINPEC and the KR have all used logging as a primary source of income. Mining of Cambodia's forests has been key to the power of the military and political leaders in Cambodia. Timber sales have been a primary source of income not only for the reigning governments, but also for the guerrilla armies that have challenged them.

Former Finance Minister Sam Rainsy, the leader of the opposition party, the Khmer National Party (KNP), points to logging revenues as Hun Sen's primary means of maintaining power.

Every year, logging revenues associated with an anarchic deforestation amount to several hundreds million US dollars but the State collected no more than 10 million US dollars in 1996 and 1997 . . . Besides the official National Budget, Hun Sen, the CPP and the Army run parallel budgets by diverting State revenues (taxes, customs duties, royalties and especially logging revenues) for their own benefits . . . [Hun Sen] never tells the public where “his” money comes from.⁸

Rainsy predicts the demise of the Hun Sen’s regime. ‘With such a poor governance characterised by a total absence of the rule of law and rampant corruption, Cambodia’s economy can only fall apart.’ And indeed, the country has seen zero percent growth in its GDP as

opposed to the 6 or 7 percent experienced in the years before. In addition, Hun Sen’s coup prompted many countries and institutions to suspend or reduce their assistance.

Additionally, there appears to be a saturation of financial corruption within the highest ranks of the Cambodian government. According to the KNP, Hun Sen’s budget system, established with the CPP and the Army, diverts State revenues ‘from taxes, customs, duties, royalties and especially logging revenues’ for their own purposes through parallel budgets. These funds are then used to bolster public support, or at least to temporarily insure cooperation. Military expenditures currently account for two-thirds of the national budget while education, health, agriculture and rural development are allotted only 12 percent.⁹ Hun Sen main-

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tains his power by appeasing political leaders and business tycoons with logging revenues and concessions.

Approximately 40 percent of Cambodia's territory is designated within forest concessions.¹⁰ The concessions, totaling over 6.5 million hectares, have been granted to Malaysian and Indonesian, as well as Thai, Taiwanese, and other companies. The process of granting the concessions appears to be wholesaling to the highest bidder. Because of the lack of transparency in the logging trade, it is difficult to assess the destination of Cambodia's timber. In addition, the current political climate renders it nearly impossible to get a breakdown of the profits that these sales are generat-

current climate of fear and violence that rules in Burma, however, there is little chance for effective forest management. As is the case in Cambodia, the integrity of the resource base and the prospects for sustainable development and regional security are held hostage to the politics of plunder and to the whims of the military and ruling elite.

Burma is the largest country in mainland Southeast Asia. After sixty-two years as a British colony, Burma achieved independence in 1948. At that point in history, it seemed to have a bright future. For fourteen years it thrived as a parliamentary democracy. Between 1950 and 1960 Burma experienced an average of

Mining of Cambodia's forests has been key to the power of the military and political leaders in Cambodia.

ing. However, it is apparent that many well-placed individuals, representing several competing political factions, are engaged in these deals. Certainly much of the wood is going to Vietnam and Thailand although many suspect that a significant quantity of Cambodia's highest-grade wood ends up in China, Japan and quite possibly Europe.

Recent meetings of the Consultative Group (CG) of donor countries that have provided foreign assistance to Cambodia have sent explicit and increasingly strongly worded warnings to the Cambodian authorities to clean up the logging situation. In July 1996 at the CG meeting in Tokyo, for example, the representative from Germany stated "If no decisive measures are taken in this field, and if considerable amounts of revenue continue to bypass the regular state budget, it will be very difficult for us to convince our authorities of the necessity to support Cambodia with German tax money."¹¹

There is now intense international pressure on Hun Sen to permit and respect the scheduled 1998 elections. As with the 1993 elections, the political factions are most likely turning to Cambodia's remaining forests for financing the election process. History is likely to repeat itself with the cycle of forest plunder exacerbated by the ironic collusion between competing factions in a race to maximize economic returns from logging, thereby undermining the nation's future.

BURMA

Ironically, Burma has a colonial legacy established during British rule based on scientific forest management. The "Selection System" involves a 30 year felling cycle based on a minimum size selection criteria for trees. In many border areas of Burma, ethnic groups have long practiced traditional natural resource management and agricultural and silvicultural systems that promote sustainable use of local forests.¹² Given the

6 percent growth in its real GDP. It boasted high adult literacy rates, a free press, and tremendous natural resource wealth. It was the second largest rice producer in the world. However, by 1987, the United Nations officially recognized Burma as a 'least developed nation.'

Burma's economic collapse was sparked by a military coup in 1962. The forces of General Ne Win deposed Prime Minister U Nu. Ne Win began his reign with several decisive economic actions. He rejected investments from foreign governments. At the same time, he nationalized manufacturing, agriculture, banks, retail businesses, and import-export trade.

A serious disunity of the people compounded the economic decent that followed Ne Win's economic directives.¹³ In 1974, after years of low-level warfare mostly along Burma's mountainous frontier areas along the Thai, Chinese, and Indian borders, the military issued a constitution which called for the unification of the country. While the constitution allowed for seven divisions of Burma proper and seven minority states, Rangoon controlled all of them. The military's denial of ethnic autonomy caused increased fighting that has not ceased. There are estimates that an average of at least 10,000 people, mostly civilians, have died each year.

Ne Win retained his power until 1988 when he resigned in the face of currency instability, famine, and demonstrations. However, the political change demanded by the people of Burma did not come. Instead, Ne Win's abdication gave the military the opportunity to violently suppress the demonstrations of democracy supporters. The new ruling force assumed power as the State Law and Order Restoration Council (SLORC). In response to the internationally publicized demand of the Burmese National League for Democracy (NLD), the SLORC agreed to a free election in 1990. The results overwhelmingly rejected SLORC in favor of the

NLD. The SLORC responded by disregarding the results and violently harassing and imprisoning NLD representatives and other advocates of change.

The SLORC has now been in power for almost ten years.¹⁴ During this time, Burmese human rights abuses have drawn an international spotlight reserved for the most egregious in the world. Accordingly, the United States and some other industrialized nations have enacted trade sanctions against Burma. In addition, despite the instability, the World Bank, the Asian Development Bank, and the International Monetary Fund will not lend Burma money because of the country's current military expenditures, lack of macroeconomic transparency and extensive record of human rights abuses.¹⁵

Several of the larger ethnic groups in Burma have been at war with the military regime for decades. However, beginning in 1989 and through the early 1990s, most of the armed resistance groups signed cease-fires with the SLORC. The cease-fire arrangements are not so much peace agreements as they are business deals. Former guerrilla armies are able to sustain their forces and control their former territories, in cooperation with the ruling regime. At the same time, the cease-fires have opened up previously remote border-area forests to large-scale, non-sustainable commercial timber extraction. As a result, the World Resources Institute has estimated that the rate of deforestation in the large northern state of Kachin has more than doubled since the SLORC came to power. Simultaneously, defense spending is purported to be at least 50 percent of government expenditures.

At the heart of these agreements is the demarcation of border areas that have long been the sites of civil warfare. Pending the cease-fire arrangements, these controversial tracts of land have been effectively divided into government-controlled and ethnic-controlled areas. Timber rights are apportioned accordingly. The SLORC and some ethnic groups are able to exploit the forests of the country's border regions at a faster and more effective pace without the current threat of open warfare. However, the current cease-fires between warring factions in Burma are not an indication that peace will be perpetuated by a common drive for logging revenue. On the contrary, in other countries such cooperation has proven short-term, with long-term consequences. Continued hardship and loss of resources for the majority, coupled with the increasing wealth and corruption of the elite minority, will likely contribute to more unrest.

While enormous profits are being made, fighting between the SLORC and adversarial factions will likely remain diminished. However, these alliances are based, at least in part, on exploitation of the limited resources, such as valuable timber and minerals. The resultant peace accords are tenuous; but they can be expected to become even more so as the timber resources in

Burma's frontiers are depleted. Most timber profits in Burma are funneled into the Union of Myanmar Economic Holdings, Ltd. (UMEH), which is controlled and owned by SLORC members, well-positioned military officers, and the Defense Ministry's Directorate of Defense Procurement (DDP). UMEH is one of the leading joint venture partners of foreign investors in Burma. Its foreign-funded projects include hotels, department stores, and condominiums in Burma's major cities. Revenue from drug exports purportedly are laundered and taxed through these businesses. At the same time, UMEH is a primary source of long-term funding for the military. As such, logging and drug revenues have enabled the build-up of extraordinary military capacity. This, coupled with the financial security of international monetary partnerships, render the SLORC more formidable than ever to opposing factions.

Thailand all but exhausted its own forests in the 1980s. However, the appetite of Thailand's burgeoning middle class for tropical hardwoods still remains strong. Burma has an estimated 50 percent or more of the world's reserves of teak, one of the most valuable species of timber. As a result, throughout the 1980s, Thailand was Burma's primary logging trade partner. Thailand switched from exporting logs to exporting loggers. A common scenario along the Thai-Burmese border is logging machinery on the Burmese side, and timber facilities on the Thai side. Thus, the Thai military is able to reap the full benefits of wholesale log purchases and retail timber sales. Although Thailand's trade prospects with Burma are robust in the 1990s, Burma seems to have been supplanted by China as Thailand's primary trade partner.

Notably, logging activity in the northern province of Kachin along the China border has recently intensified. Almost all of the cease-fire groups are taking part in the exploitation of this frontier region. While some of the tribes cut logs themselves, others only tax the timber as it goes through their areas on route to China. All have enjoyed, however, an unprecedented boom in timber sales since the SLORC's cease-fire agreements have opened the way for a flourishing timber trade.¹⁶ Until the advent of the increased timber trade, considerable tension persisted along the Chinese border. However, relations between Burma and PRC have warmed considerably because of the strong mutual interest to exploit forest and other resources.¹⁷ Chinese companies are currently providing technical and financial assistance in the construction of a network of roads along Burma's northeastern frontier in exchange for the cutting of teak and other hardwoods found along the way.

India, another giant neighbor that has had a long history of political tension with Burma, has improved its relations in part to facilitate trade in Burma's valuable timber, particularly teak. A 1995 trade agreement between the two countries was struck after a February

meeting between India's minister of state for commerce and Burma's former Forestry Minister, Lt. General Chit Swe.¹⁸ The parties discussed the establishment of forest-based industries in the border areas and teak trading directly at border points, instead of first passing through Rangoon.¹⁹

While these business deals seem to be temporarily fostering good relations, the newly bolstered timber trade creates several causes for concern. First, the capital generated by the SLORC is used predominantly to finance its armed forces. The SLORC's military is comparable to that of Indonesia's in what is considered a highly militarized state with a population over four times the size of Burma's.

Secondly, Burma is the source of approximately 50 percent of the world's heroin.²⁰ Logging and heroin trafficking often go hand in hand in Burma. Reports from inside Burma suggest that in some areas, forests are cleared for commercial timber export, then planted with opium poppies. The same roads used for transporting timber from Burma to China are often used for transporting heroin and opium into China. Frequently, logs are hollowed out and filled with heroin and other opiates, often produced in rebel-held areas, for transboundary trade. The lucrative and volatile nature of drug trafficking makes it fodder for potential conflict.

Thirdly, Burma's population as a whole is benefiting only minimally—if at all—from the depletion of its forest resources. There is no accountability for the transfer of the conversational resources and political-military elites are gaining the wealth and power derived from the logging. This sort of corruption at the highest level of government is causing anger and cynicism among the population, comprising a serious potential source of conflict.

Finally, the PRC's commercial, military, and transportation endeavors throughout Burma are of regional security importance. In May 1997 the PRC and Burma officially announced that the PRC would be building a transportation route from Yunnan Province, through Burma, to the Andaman Sea. However, long before the talks and agreements, the PRC had been constructing roads and railroads as part of logging agreements. The PRC claims that trade is the goal of this link between its landlocked southwestern provinces and the sea. However, there appears to be an ulterior motive, as evidenced by the electronic listening posts that Chinese technicians helped the Burmese army to install along the Bay of Bengal and the Andaman Sea. In November 1997, Australian defense analyst Desmond Ball stated: "Those posts are ideally situated for monitoring Indian air movements in the eastern part of the Bay and Bengal as well as intercepting telemetry associated with Indian missile tests over the bay."²¹ India is outwardly concerned about the probability of regular Chinese presence on the coast. At the same time,

Singapore is raising concerns not only about its own security interests, but also about the elevated level of influence the PRC has in Burma.

CONCLUSION

The remaining mainland tropical forests are an important piece of the Asian regional security equation. Logging is central to the downward spiral in the region; corruption among the political and economic elites leads to rogue logging, which in turn fuels a further disintegration of the structures of civil society and good governance. As such, the accelerated deforestation caused by excessive and illegal logging severely undermines the chances for the development of independent judiciary systems, political accountability, and effective law enforcement. Long-term, sustainable natural resource management will not occur without these, the tenets of civil society.

Cambodia stands a good chance of becoming a 'beggar state' as a result of ecological deterioration in the form of drought and flooding, siltation and fish die-offs, and other consequences of large scale deforestation. In something of a precedent-setting decision, the International Monetary Fund froze a \$20 million infrastructure loan to the Royal Government of Cambodia in May of 1996 on the basis of the government's diversion of timber revenues away from the national budget. The country's volatility has been exacerbated since Hun Sen's July, 1997 coup. When the IMF stopped payment on an infrastructure loan again in 1997, Hun Sen responded by threatening to cut down all of Cambodia's forests. Without a functioning government and policy structure that promotes sustainable development, the threats to Cambodia's forests will go unabated.²¹ Loss of forest cover causes not only long term negative social and economic impacts, but it also deprives often marginalized forest dependent communities of food, shelter, fire wood, and water resources. The loss of this natural resource is likely to lead to further impoverishment, competition for increasingly scarce natural resources and increased civil unrest. In a country already torn apart by decades of fighting, continued resource destruction could very easily contribute to renewed violent political conflict as well as long-term impoverishment.²³

Burma, a country that has suffered a great deal from war and repression, stands to lose much if not most of their remaining upland forest resources. Millions of ethnic people, who depend on these forests for livelihoods and development potential, will suffer adverse consequences. The military regime's official forest policy has relatively progressive language concerning community based forest management and conservation. In reality, implementing these policies is impractical at best, given the current climate of political oppression and fear. It is likely that the strict new official logging regulations and participation at international

conferences are token actions for the approval of donor countries and agencies. It has been suggested that officials charged with enforcement of environmental legislation are often deterred by the regime from fulfilling their responsibilities. Military spending continues to significantly increase Burma's external debt while consuming a disproportionate percentage of logging revenues. At the same time, in the face of China's aggressive actions in Burma, the current regime seems to have only selective concern for Burma's long-term national sovereignty interests.

The position of the importer of Southeast Asian timber is fundamental to much of the current predatory logging in Cambodia and Burma. The current cycle of conversion, consumption and corruption in Southeast Asia involves the collaboration of the world's industrial nations. While the more economically developed Southeast Asian countries may be directly responsible for the majority of the logging trade, a significant proportion of the trade in processed natural resource products eventually ends up in the markets of the Europe, the United States and Japan. Burmese and Cambodian wood could appear in the form of affordable hard wood furniture in London, picture frames in New York, or scaffolding for construction in Tokyo, thus globalizing the cycle of supply and demand.

Trade sanctions are one of the most controversial policy tools being implemented. The United States and several European countries recently enacted sanctions against Burma, based primarily on human rights abuses. In the Case of Cambodia, the CG's twenty-one member nations, which meet annually to determine the merits of financial assistance, also have considerable leverage in pressing for forest policy reforms. Controlling damaging logging has been a priority of aid and trade negotiations with Cambodia in the last two years.

Similarly, ASEAN has shown an interest in promoting improved environmental policies in the region, especially in light of the impact of the Indonesian forest fires. Cambodia, Burma, and Laos were extended invitations to join Association of Southeast Asian Nations (ASEAN) in 1996. It was ASEAN's goal to expand from seven to 10 in honor of its 30th anniversary. However, only Laos and Burma were permitted to join. Hun Sen's recent violent political activities were unacceptable to ASEAN and kept Cambodia out.

Burma's entry into ASEAN may be seen as a positive step in encouraging political change through peer pressure. To this end, ASEAN initiated a constructive engagement policy. Thus far, however, it does not seem to have paid significant dividends. According to recent reports ongoing violence and repression is intensifying in many areas of the country. Logging, particularly in Burma's mountainous borders with India and China, appears to be accelerating.

Despite the seemingly unfeasible prospect of forging solutions to these apparently intractable problems, the first, and most important activity for outside au-

thorities is to focus attention on the forestry and natural resource conditions and trends, as well as the political and economic indicators in this still-volatile region of the world. The United States should work with the community of nations, ASEAN, the Asian Development Bank, and others on integrating environmental priorities into regional policies. These efforts should formulate a set of clearer strategies for site-specific approaches to forest conservation in this critical region, based on the realities of development at the national and international levels.

ENDNOTES

1 This paper does not use the adopted name "Myanmar" given to Burma by the SLORC regime in 1988. The name Burma is used in accordance with the Burmese National League for Democracy, the United States Government and many other countries, and leading publications including *The Washington Post*, *The Bangkok Post*, *The Nation* and *The Far Eastern Economic Review*.

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3 "Thais Most Blamed for Rape of Forests," *Bangkok Post*, 15 November 1992.

4 *Washington Post*, 3 February 1993.

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6 Far Eastern Economic Review Journalist, Nate Thayer, interviewed Pol Pot in far northern Cambodian jungle after he was arrested and sentenced by a village court in August, 1997.

7 Global Witness, *RGC Forest Policy & Practice: The Case for Positive Conditionality*. (United Kingdom: May 1996): 3.

8 Khmer National Party website: www.kreative.com

9 Ibid.

10 *From Plan to Market, World Development Report, 1996*. (Washington, D.C.: World Bank, 1996.) Map of concessions.

11 Global Witness, *Just Deserts for Cambodia*, (June 1997): 29.

12 Karen National Union, mimeo of fax: *Karen Struggle to Protect Their Environment Amidst War, Poverty and Politics*. (17 July 1996).

13 There are sixty-seven different ethnic groups in Burma.

14 In November 1997 the SLORC changed its name to the State, Peace and Development Council as part of a purge of several Generals and a further consolidation of the regime's power structure. For the purpose of this paper, the original party name will be used.

15 In early 1998, Japan reinitiated some level of foreign assistance to Burma.

16 "The Cutting Edge," *Far Eastern Economic Review*, (December 22, 1994).

17 Jake Brunner, Kirk Talbott & Chantal Elkin, *Logging Burma's Frontier Forests: Resources and the Regime*. (World Resources Institute, Washington, D.C., Forthcoming).

18 Chit Swe was recently removed from his office by SLORC, purportedly for 'extensive' corruption.

19 *Bangkok Post*, (28 February 1995) and Reuter, (10 April 1995).

20 *Burma Debate* 3 (July-Aug, 1996): 12.

21 Bertril Lintner, "Burma Road; China's Economic Push Southward Worries Neighbors," *Far Eastern Economic Review* (6 November 1997) (on-line: www.feer.com).

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Environmental Degradation and Migration The U.S.-Mexico Case Study

The Natural Heritage Institute

In ECSP Report Issue 3, we published the initial findings of the Natural Heritage Institute's (NHI) U.S.-Mexico Case Study on Desertification and Migration. Following is a detailed account of the conclusions and recommendations to policymakers from NHI's final report entitled Environmental Degradation and Migration: The U.S./Mexico Case Study. This report presents the findings of a four-year investigation led by Michelle Leighton of the NHI, a nonprofit, public interest environmental organization. NHI seeks to broaden understanding about the interrelationship between the social, economic, demographic, and natural resource management-related determinants of transnational migration.

DETERMINING THE ROOT CAUSES OF MIGRATION HAS BECOME THE FOCUS OF OFFICIAL INVESTIGATIONS IN NORTH America. Mexican and U.S. agencies agreed in 1994 to study jointly the causes and consequences related to cross-border migration. Their effort lacks analysis of the environmentally related causes of migration. Our report, the culmination of an investigation since 1993 on the U.S.-Mexico case study, seeks to fill this gap in analysis and to provide a framework for policy reform. We are pleased that the U.S. Congressional Commission on Immigration Reform has incorporated certain key findings and recommendations from our report into its official Congressional report of September 1997. Importantly, it too urges Congress to consider the environment and development root causes of migration in establishing its foreign policies related to Mexico and other countries. NHI's findings, provided in this report, can serve as a beginning point for further official debate and action on the issue.

NHI is undertaking several activities in follow-up to this work, including an analysis of U.S. bilateral assistance in the environment and development areas, focusing first on USAID programs in Mexico and how these may be improved through greater integration and targeting. NHI also co-hosted a workshop with the Environmental Change and Security Project at the end of June which brought together officials and nongovernmental organizations to consider the implications of these findings in the global context of environment and development issues, and their implications for U.S. foreign policy and bilateral assistance.

CONCLUSIONS AND RECOMMENDATIONS: POLICY REFORM AND PROGRAM DEVELOPMENT

The goal of NHI's investigation has been twofold: First, we wish to provide a better understanding of what is becoming an increasingly apparent and significant root cause of Mexican migration: rural land degradation or desertification. Second, we hope to demonstrate how official programs, initiated at local, national, and binational levels, can begin to address this problem more concretely. Our study indicates that environmental phenomena and associated population and migration flows cannot be addressed through short-term fixes initiated by the United States, such as additional border security and employment-related sanctions. Rather, official and private, or non-governmental programs within Mexico to address these problems is warranted. The United States can play a catalyzing role for these reforms through binational, cooperative programs with Mexico's private and public sectors. As discussed below, the United States has technology and expertise that can serve in facilitating these programs. To date, these opportunities have been little advanced beyond the physical border area.

It is anticipated that the following conclusions and recommendations can serve as a framework for the development of cooperative programs between Mexico and the United States in the areas of research and official and private program development. This section is accordingly divided into two categories: Potential for

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U.S. Action and Opportunities for Policy Reform. The latter is related to specific programs on environment, agriculture, and community development.

A. POTENTIAL FOR U.S. ACTION: POLICIES AND PROGRAMS

I. *Cooperative Programs*

Our findings demonstrate a strong correlation between land resource degradation, poverty among rural households, the lack of capacity to farm, and migration both within Mexico and across the U.S. border. The pervasive deterioration of lands in Mexico in the rural drylands should be viewed as an important contributor to migration flows (whether seasonal or permanent). Yet, U.S. policies and programs related to Mexico do not address this problem in an integrated fashion. Most programs, both private and public, seek to address only one facet of the problem, such as deforestation and loss of biodiversity in Mexico. Some of these have begun integrating population-related issues but only in a few circumstances. Generally, community development issues are targeted through unrelated channels and carry different priorities and agendas from those related to environmental preservation. The link between these issues and the policy of reducing rural migration, where it is considered at all, is often more rhetorical than a factor influencing program development.

U.S. bilateral assistance and funding from private foundations generally follows this pattern. U.S. policies and programs related to migration or *immigration* similarly do not readily consider the root causes related to environment or population trends. Most of the U.S. immigrant policy initiatives center on the physical border area. Yet, opportunities exist for binational program development in all of these areas. Our findings suggest that targeting official program development and assistance in a more innovative and integrated fashion may not only yield positive results for environment and community development in Mexico, but may prove a more sound long-term investment in reducing migration than those focusing solely on prescriptions along the border.

The recommendations in this report are not meant to serve as a panacea for all migration, environment and development problems noted. Rather, they are meant to serve as a framework for debate on policy reform. Given the scarcity of bilateral resources, cooperative U.S.-Mexico programs should address improved rural development and agricultural productivity. In terms of assuring improvements in land degradation, poverty, and migration, this can be considered on two tracks: 1) the new migration-emitting states with extensive marginality and poverty, substantial soil erosion problems and, in some cases, high population

growth rates: Oaxaca, Puebla, Veracruz, Tabasco, Campeche, Yucatan, Quintana Roo, and Chiapas. This is warranted because raising the rural income in these areas may have a significant impact on migration;¹ and 2) the states or regions where migration is already well-established. These areas will require significant investment in scope and magnitude in order to have enough of an impact to compete with the opportunity costs of migration in those sending areas.² Specific opportunities are discussed in Section B, below, related to areas for policy reform.

As a jurisdictional matter, there are several opportunities for U.S. binational program development along these lines. For example, in 1997 the Memorandum of Understanding (MOU) between SEMARNAP (Mexico's environmental agency) and the U.S. Department of Agriculture was amended to include a framework for cooperative cross-border program development to address forest and soil management issues, including desertification. Joint program development under this MOU should be strongly supported by the United States, particularly as the Department of Interior's Bureau for Land Management, and U.S. Department of Agriculture's Natural Resource Conservation and Forest Services have extensive experience in dryland management issues and can provide a wealth of technical and institutional expertise in cooperative programs undertaken between Mexico and the United States. Funding has not been provided for development yet. Agencies in both countries should identify collaborative action programs within this framework. Another immediate opportunity is for the United States to ratify the U.N. Convention to Combat Desertification and Drought. That Convention also provides a substantive framework within which both countries and nongovernmental organizations can develop action plans. Mexico has already ratified. U.S. leadership on the treaty could ensure that the United States works more closely with Mexico in Mexico's development of land management programs, perhaps emphasizing attention to migrant-emitting states with high desertification rates, such as the southern states of Mexico.

2. *Integrating U.S. Environment, Population, Migration Policies*

As noted earlier, current U.S. programs and policies address environmental, population and migration problems separately as a matter of foreign policy. For example, though these program areas are housed within Global Affairs at the U.S. Department of State, there is little practical or programmatic integration of these issues. The U.S. Ambassador to Mexico has indicated these interrelated problems are critical for U.S. foreign policy.³ Too, Mexico's agencies with the separate mandates of protection of natural resources, im-

provement of agriculture, population initiatives, and migration have traditionally not considered how best to address such integrated issues. President Zedillo's "Alliance for the Countryside," discussed below, may be a start. The following discusses potential reform of U.S. policies and programs as a beginning point for addressing the issues that touch upon U.S. foreign policy interests.

One example of where inter- or intra-agency coordination in U.S. policies and programs can be better targeted in addressing these issues is with regard to the U.S. Agency for International Development (USAID). In reviewing program work in Mexico, for example, USAID programs in population, economic development, and the environment do not address the relationship between land degradation, population, or migration problems. In fact, they appear not to address migration. One reason may be that migration issues are sensitive or, in some cases, highly controversial as related to cross-border foreign policy. Nonetheless, there is little in USAID programs presently that seeks to address the environmental issues of agricultural land degradation in dryland areas. The environment program is focused on climate change and biodiversity, two important programs to say the least, but which, without linkages to agricultural dryland management issues, will do little to address the significant problems identified in this report. The economic development program similarly does not address land degradation in rural areas which is contributing to low agricultural productivity and marginalization of rural drylands. Education programs supported by USAID also lack reference to these issues. Population programs are being cut entirely, though there USAID is now requesting an extension to the year 2000.

Part of the problem appears to lie in the fact that within the USAID bureaucracy there is a clear separation between agricultural programs and environmental programs. As the Mexico case study illustrates, unsustainable agricultural land management can lead to severe soil erosion and deforestation, or clearing of lands for additional grazing or crop cultivation. This affects the quality of both land and water resources. Yet, the separation of these programs tends to support the separation of projects to address these issues and within the Mexico program there are now no agricultural land management issues targeted for funding except as ancillary efforts of a few biodiversity projects.

Moreover, there is no concerted vision to utilize U.S. funding programs to target areas in Mexico where environmental improvement and education may serve to improve community development and limit growing levels of out-migration. Given the limits of urban infrastructure to assimilate rural migrants in many of Mexico's fastest growing cities, this is a critical issue for the Mexican government. It could serve as a foun-

ation for U.S.-Mexico cooperation. In sum, there is an urgent need for better integration of U.S.-sponsored policies and programs, both in terms of foreign policies and assistance. Agencies could begin with a serious review of how current programs and policies can be better integrated.

3. Uses of Remittances for Improving Local Development and Institutional Capacity

One innovative means by which the United States can catalyze environment and development initiatives to reduce migration may be through the use of remittances, which now total anywhere between \$1.5 and 4 billion depending on which statistics you use. According to International Monetary Fund figures, for example, remittances to Mexico totaled \$4.3 billion in 1995 and \$40 billion between 1975 and 1990. Remittances can enhance the productivity of land use by reducing poverty⁴ and overcoming market and institutional failures and lack of investment in public goods. The large scale of such transfers makes the use of these funds a potentially potent opportunity to improve rural land management development, and to reduce migration. This potential has been largely untapped.

For example, the United States and Mexico can do more to reduce the cost of transferring remittances to Mexican rural areas, though these transfers are generally handled through private, rather than official, channels. Currently, these transfers are in small amounts, less than \$300, and there are high fees to sender and recipient usually associated with these transfers, often as much as 20 percent of the amount transferred.⁵ This means that nearly \$1 billion per year of the IMF's estimated remittance transfers is used to pay transfer fees. An innovative program between the United States and Mexico could seek to facilitate reduced transfer fees where funds were invested in community programs that would improve local development and environmental assets. Given that much rural development depends on agricultural productivity and marketing, the incentive program could be combined with bilateral programs making investment in agriculture more attractive (such as by price policies that do not discriminate against agriculture), or alternatively, encouraging the development of local entrepreneurial businesses. Channeling remittances toward local investment may decrease poverty by creating employment in emitting communities, thereby reducing incentives to migrate.⁶

4. Support for Research That Can Identify Solutions in an Integrated Fashion

There is an immediate need for research on the environmental causes and consequences of migration—particularly in rural agricultural regions of Mexico. Most of the research on migration to date has focused

largely on sectoral issues—e.g. research on agricultural productivity has not traditionally focused also on related environmental degradation, such as deforestation, or on contributors to migration, such as lack of education or family planning programs. This in turn has led to policies that do not approach these problems in an interrelated fashion. The inverse is also true—when programs to arrest deforestation are implemented, they do not readily integrate issues of community development. We have observed that this dynamic is beginning to change. Further research will help identify opportunities for integrated programs on the field level, and can suggest how best to harmonize policies and programs at the national or binational level.

The further development of methodologies for integrating environmental, population pressure and migration predictions is of particular importance in addressing the issues of poverty and migration among Mexican farmers and laborers. Data show that environmental stress variables are of significant importance because they can create incentives to migrate. Population pressure on the *ejido* population and the increasing rate of deforestation may also result in increased migration. Policies targeting the amelioration of environmental stress and population pressure on the land could play pivotal roles in reducing incentives to migrate to the North. If implemented properly, they would work by retaining migration.

B. OPPORTUNITIES FOR POLICY REFORM AND PROGRAM DEVELOPMENT

1. *Environment and Agriculture*

a. *Promoting Improved Land and Water Management Practices*

Our findings demonstrate a strong correlation between land resource degradation, poverty among rural households, the lack of capacity to farm, and migration both within Mexico and across the U.S. border. The pervasive deterioration of lands in Mexico in the rural drylands should be viewed as an important contributor to migration flows (whether seasonal or permanent). Though research is not conclusive in documenting the number of people migrating, the Mexican government has estimated that somewhere between 700,000 and 900,000 people a year are leaving rural dryland areas which are threatened by or undergoing desertification processes (processes of soil erosion).⁷ The high levels of marginality,⁸ low levels of education, and continued population pressures in rural areas also play a role in this dynamic.

This suggests the need for improved and more widespread education and training programs in the rural areas, including but not limited to programs to improve agricultural management practices, soil con-

servation, and water use. There is also a need to promote the use of good fertilizers, high yield seeds, and a substantial variety in crops. Emphasis should also be placed on the reduction of water intensive dry land crop cultivation and substitution of drought resistant crops in areas where salinization is a problem, and where the land and climate can support some form of cultivation. Development of incentive programs to support transition to water conserving irrigation systems is also warranted. Conservation serves to protect scarce water supplies which are critical in arid areas, particularly central and south Mexico; in the north, replacing inefficient systems could reduce salinization of land and water resources by limiting the application of water which tends to mobilize salts naturally present in soils.

The Mexican government has undertaken efforts in many of these areas, including its establishment of a Soils Conservation Service in 1995 within the natural resources agency, SEMARNAP. One effective area for the new Conservation Service is a farmer to farmer training program in which successful small farm management is documented and demonstrated to other small farmers. Unfortunately, soils conservation education and training programs now receive little financial and political support. The new conservation agency should be strongly supported by the Mexican government and, where appropriate, U.S. programs developed in cooperation with Mexico in this regard. One area in need of immediate attention is the development of an environmental monitoring system which allows for continued information gathering and analysis of social and economic impacts in rural areas. This could serve as an early warning system for areas most critically affected by environmental and socio-economic changes.

There are other opportunities. Capital flows into Mexico are increasing with the likely result of an appreciation of the peso and a decrease in the real farm price of corn, thus creating more poverty and displacement among smallholders who are net sellers of corn.⁹ To circumvent these effects, modernization of agriculture and crop diversification among these producers should be promoted.¹⁰ For modernization to be successful there should be investments in infrastructure and institutional reconstruction.¹¹ Displacement may be avoided by the use of *Procampo* transfers (this is the program which pays small land owners a certain amount per hectare to support investment in agricultural modernization and diversification) as opposed to sustaining household consumption. For this to occur, the transfer of financial resources should be timely relative to the liquidity needs for agricultural production and be accompanied by technical assistance.¹² An additional option may be to develop access to off-farm complementary sources of employment that can be accessed without abandoning a part-time farming activity.¹³

b. *Improved Forest Management and Land Tenure*

Most of the Mexican forests, many of which are threatened by over-harvesting, are located on *ejido* land, where much of the property is communal and cooperation with other communities in forestland management has been problematic. This lack of cooperation has led to overuse of land, including overharvesting and soil erosion. One solution may be to direct policy efforts at resolving property rights on these lands and effectively manage common property resources.¹⁴ Part of this solution must include continued regulation of forest management and improved enforcement of laws/policies.¹⁵ According to some experts, adequate forestland management requires trained, equipped personnel who can utilize integrated and multipurpose forestry products and which involves local communities or local nongovernmental organizations.¹⁶

2. *Population and Rural Development*

a. *Population and Other Demographic Initiatives*

Research indicates that population trends in growth and movement in Mexico's rural areas are correlated with poverty and land degradation, particularly in *ejido* communities. Population pressure on natural resources, measured by the rate of deforestation are important determinants of migration. Reducing this pressure should be part of efforts to reduce migration at the source.

Given the scarcity of good farmland in Mexico and the large size of the farm population, increasing the productivity of labor in farming offers a limited solution. It may be more important to focus on the development of decentralized non-farm activities. Specifically, activities which lead to greater decentralization away from the border and the main cities of the benefits created by NAFTA in labor intensive manufacturing are warranted. As with development strategy, balancing protection of the environment with project development initiatives will be critical to preserving Mexico's natural resources.

In addition, more in-depth research of the correlations between population trends and migration is warranted to quantify this contribution and identify more concretely the extent to which population growth leads to further subdivision of and pressure on lands. Deforestation may well be a symptom of population pressure,¹⁷ though some argue that it is the inverse. The Mexican government has succeeded in reducing population growth rates, though the rates still remain quite high in rural areas and in indigenous communities may often reach a figure double the national average. Education programs need to be expanded to the more remote rural areas. These programs can require long

maturation periods in order to achieve long-term results and require a longer-term commitment of resources. In Mexico, these programs may be subject to greater volatility related to the Presidential cycle. Budgets for such programs are not as robust as they will need to be to effectively address this problem. Moreover, USAID efforts to address population problems are being canceled. U.S.-Mexico cooperative programs in the population area should be revisited to determine how integration of these programs with other environmental and economic development programs can serve to address the root causes of migration identified in this report.

b. *Community Development Initiatives*

Poverty, which in rural areas is exacerbated by the inability to productively farm, or by the farming of marginal lands, is an important factor in the decision to migrate. Municipalities with high levels of marginality also have high rates of migration, indicating that the lack of local opportunities and poverty are important determinants of migration. Community development programs established in rural areas should focus on the reduction of crop cultivation where the soil and/or climate are unsuitable for cultivation and the institution of controlled grazing practices. Moreover, it is recognized that there is a need for employment creating new investments to expand from the border area into the interior regions of Mexico. Many of the benefits created by NAFTA in labor-intensive manufacturing have been focused on the border and some have called for more aggressive efforts to attract development further south.

Small producers face the threat of displacement by more competitive farmers due to land titling reforms that may create a market where only the most competitive landholders will succeed.¹⁸ While this may not be undesirable in terms of pure economic theory, it is likely to have a tremendous impact on migration—there is likely to be a surge in migration out of the rural agricultural areas as this economic transition takes place. Improved farming productivity from soils conservation and related programs may not only result in better environmental resource management, but allow, where appropriate, for a slower and more equitable transition toward an ultimately more urbanized Mexican society. Moreover, soils conservation and agricultural training can be directed at the marginal and subsistence producers to increase sustainability of their livelihood and reduce involuntary migration.

In the longer-term, both financial institutions and producers' associations should be created for smallholders in order to enhance smallholder competitiveness and fill the void that remittances are currently filling in providing access to financial liquidity and sources of insurance.¹⁹ To achieve this, there should

be an increase in the profitability of investment in labor intensive agricultural activities. One avenue is through the cultivation of fruits and vegetables that acquire competitive advantage in the context of NAFTA. Most of rural central/southern areas of Mexico remain highly dependent on extensive corn/maize production, and transition would take some considerable effort, financially and otherwise. This high "front end" investment may provide more-lasting long-term benefits. Too, this would require public investment in infrastructure (irrigation and roads), and organizational and institutional development of these areas so that farmers can invest profitably in agriculture. In addition, developing financial institutions on both sides of the border that will channel remittances to the emitting areas and make migrants' savings available for borrowing by other community members with investment plans, would also help create employment.²⁰

The Mexican government has recognized the need for implementation of substantial efforts to address rural development. In 1995, Mexico created "Alliance for the Countryside" to address socio-economic problems affecting the agricultural sector. It comprises the following Secretariats: SAGAR, Hacienda y Credito Publico, Comercio y Fomento Industrial, Reforma Agraria, Desarrollo Social, SEMARNAP and Trabajo y prevision Social. The Alliance's general goals are to increase the income of agricultural producers and agricultural production to a level above population growth, produce sufficient basic foods for the population, promote the export of products from countryside, preserve natural resources and increase rural housing. These policies are to be implemented by facilitating access to new technologies, promoting the inflow of capital into the countryside, and improving human resources through training. There are 64 initiatives proposed by many different agencies in the Alliance but it is uncertain which are being undertaken. Our investigation revealed agency funding cuts have led to little improvement, especially for natural resources and agricultural management programs.²¹

In addition, Mexico's National Development Plan (1995-2000) includes a three-point plan established by the Mexican National Science and Technology Council, in association with SEMARNAP, to improve soil management as follows:

- 1) conduct a national soils inventory (currently underway);
- 2) develop new soil legislation to revise legislation as appropriate, including connecting property and usufruct rights with the responsibility of conserving and restoring the soil, and develop soil management and restoration standards with the aim of producing clear standards that protect investments while maintaining a low level of bureaucratic red tape; and

- 3) persuade agricultural producers to modify their management practices to better assure sufficient income and sustainability of soil resources.

The government has yet to make substantial funds available for these reforms. However, there is much that can be done in terms of training campesinos, civil servants and governmental and non-governmental promoters.

As a final note, many of the needed initiatives discussed could be further catalyzed by U.S.-Mexico cooperation and assistance. These opportunities are described above in the section on Conclusions and Recommendations. Importantly, NHI's findings suggest that targeting program development and assistance in rural environmental and agricultural settings, in association with public or private localized programs, can serve as a potentially potent investment in reducing migration. This will not be a daunting task as both private and official institutions in the United States possess environmental resource and agricultural expertise that can be utilized in approaching cooperative program development with counterpart institutions in Mexico. Nongovernmental organizations on both sides of the border have already begun to work together on these issues. Official leadership is needed to move beyond these initial efforts. We strongly urge exploration of these issues and opportunities by Congress and the Administration.

ENDNOTES

¹ Areas where migration is well-established have already lowered their transaction costs of migration making the opportunity costs of migration much greater (A. de January report, Appendix, p. 16). The newer areas have not yet reduced the transaction costs of migration (Id., p. 16). Consequently, rural development efforts in the newer areas may have a greater impact in reducing migration: improved development opportunities could effectively compete with the opportunity costs of migration (Ibid., p. 16).

² See Appendix 1, p. 16.

³ Internal Communiqué from U.S. Ambassador Jones to the White House, U.S. Department of State and other federal agencies, January 1997 (on file with the Author).

⁴ Ibid., p. 6.

⁵ Information was provided by several commentators on this, including in written comments of Professors Philip Martin and David Myhre, Fall 1997. Professor Martin has identified that for a US \$300 transfer, Western Union charges 10% and on the Mexican side, Electra exchanges the money into pesos at a very high rate.

⁶ Appendix 1, p. 16

⁷ See discussion in earlier sections of this report.

⁸ Marginality is measured by CONAPO at the municipal level through an index that eight low levels of education, poor housing conditions, high percentage of the population in communities of less than 5000 inhabitants, and a high incidence of households in poverty.

⁹ Appendix, p. 17

10 Ibid.

11 Ibid.

12 Ibid.

13 Ibid.

14 Ibid., p. 16.

15 Ibid.

16 Written comments of Hector Arias, Cideson, Sonora, Mexico, to NHI September 8, 1997. One problem he notes is that large consortia of timber companies exploit the resource. Yet, the lands are owned by local individuals or ejidos and the local people bear the responsibility for reclamation at a practical level. As reclamation is generally expensive and requires training; it is often not undertaken effectively.

17 Ibid.

18 See Appendix 1 pp. 16-17.

19 Ibid.

20 Ibid.

21 Some have criticized these programs. Paredes Rangel, General Secretary of the National Campesina Federation, indicated that the most important aspects of the program were

technology transfer and training (1995); Mazon-Rubio, President, National Agriculture Council, is concerned that the subject of stable income was not addressed and proposed that a follow-up schedule to deal with pending issues be created (1995); for Bonilla-Robles & Gonzalez Quiroga (1995), land ownership issues were of paramount importance; to Bonilla-Robles & Gonzalez Quiroga (1995), land ownership issues were of paramount importance; to Bonilla-Robles (President, National Federation of Small-plot Owners: rural credit and commercialization issues are important; Gonzalez Quiroga has indicated that rural training programs sponsored by institutions have yet to reach rural areas. Programs are needed that will generate rural jobs and maintain sale prices of agricultural products above production prices. Rural credit programs are not working and the rural sector needs the government to guarantee loans so that producers with un-paid debts will be eligible for new loans. Un-paid debt is far from being resolved. New monies should not be used by just a few individuals or by the banks themselves, but instead should be managed fairly.

Dialogue, The Wilson Center's Radio Program Discussing Environment, Population and Security

Dialogue, the Wilson Center's award-winning radio program, explores the world of ideas and issues in national and international affairs, history, and politics. Broadcasts are hosted by George Liston Seay, public and international affairs specialist, and feature weekly conversations with renowned scholars, authors, and public figures. Several shows have been devoted to discussing environmental issues, and the following broadcasts can be purchased through Public Radio International:

Broadcast 137: "The Politics of Conservation"

Douglas Weiner, Assistant Professor of History at the University of Arizona in Tuscon
Saving the world's resources is undoubtedly a good thing. Yet in the past some groups have used environmentalism's positive goals to advance less honorable political notions. Douglas Weiner, scholar and environmentalist, discusses environmental decisions and their unavoidable political consequences.

Broadcast 283: "Environment and Security"

P.J. Simmons, Director, Environmental Change and Security Project, Woodrow Wilson Center
The world's environmental crisis continues apace. In emerging nations of Eastern Europe and in the developing regions of Asia and Africa armed conflict abounds. New strategic thinking suggests a linkage between these phenomena, and a new discipline joining environmental and security concerns is being developed. P.J. Simmons describes the actors and factors in what may be a 21st century strategic theme.

Broadcast 235: "The Population Challenge"

George Moffett, Diplomatic Correspondent, *Christian Science Monitor*
During the 1970s the world's crisis of population growth was widely noted and debated. Then, as public attention shifted to the worldwide economic crisis of the late 1980s and the political upheaval of the early 1990s, population issues seemed almost to disappear. George Moffett, Diplomatic Correspondent for the *Christian Science Monitor*, argues that the crisis is more threatening than ever. He describes its dimensions and suggests solutions.

For Information: Karen Reid, *Dialogue*, (202) 287-3000 extension 325 and Richard Ruotolo, Public Radio International (612) 330-9252; Email: radiodial@aol.com; Web: <http://wwics.si.edu/>. For a cassette copy of programs, listeners may call Public Broadcast Audience Services at (303) 823-8000.

Solving China's Environmental Problems: Policy Options from the Working Group on Environment in U.S.-China Relations

by Aaron Frank

THE PEOPLE'S REPUBLIC OF CHINA (PRC) IS BECOMING AN INCREASINGLY IMPORTANT PLAYER IN INTERNATIONAL AFFAIRS, given its staggering 1.2 billion population, growing military and economic power, and ability to affect regional stability in Asia and important global issues. The United States realizes that it needs Beijing's cooperation to achieve regional and international objectives, yet many contentious issues continue to strain the U.S.-PRC relationship. Environmental issues, however, have the potential to serve not only as a building block for U.S.-PRC cooperation but also as a model for how the United States will engage other developing nations with similar environmental problems. As Michael May asserts, "How the existing powers, most of all the United States, engage China is likely to have a profound effect on the perceptions which India, Pakistan, Indonesia, and many other countries in and outside the Asian continent will have of the options open to them and on the assumptions they will make about what the U.S. role in their growth will be" (May, 1997).

While U.S. engagement with China is multifaceted, environmental issues have become a core component of improved relations. As demonstrated by a multitude of cooperative agreements between the United States and China on science and technology issues, the environment has developed into an area of flourishing success in U.S.-China relations.

However, China's environmental difficulties continue to grow at alarming rates. China is the second largest emitter of greenhouse gases (the United States is first and has much higher per capita emissions than any other country), and its emissions are growing while those of most developed countries are either stabilizing or decreasing. Inefficient and "dirty" coal accounts for 75 percent of Chinese energy production, contributing to serious urban air pollution throughout China. According to the World Bank, at least five of the nine most polluted cities in the world are Chinese and 500 major cities in China do not meet World Health Organization (WHO) air quality standards (Mufson, 1997; *China Environment Series*, 1997). Air pollution in Beijing is six times worse than in New York City, and while Beijing has only one-tenth the number of automobiles as Los Angeles, its automotive emissions are almost as great (Mufson, 1997; World Bank, 1997).¹ Acid rain, stemming from the burning of China's high sulfur coal, causes \$2.8 billion of damage to China's forests, agriculture, and industry every year (Hertsgaard, 1997). Other environmental concerns such as water quality and quantity, biodiversity loss, and food security are also reaching critical levels in China. Declining conditions have had measurable impacts on the health of Chinese citizens and economic growth.²

To address these important concerns and debate strategies for engagement with China on environmental issues, the Environmental Change and Security Project created the Working Group on Environment in U.S.-China Relations in November 1996. While at first concentrating on energy issues, monthly Working Group meetings have also included discussions on water quantity and quality, financing mechanisms for environmental protection, and biodiversity issues. Water issues were considered of utmost importance to the Chinese and will impact Chinese agricultural output, economic growth, and urban water supplies. Future Working Group sessions will address food security and population. Working Group discussion repeatedly returned to the themes of multilateral cooperation, domestic Chinese environmental issues with significance for the United States, and impediments to cooperation on U.S.-led projects within China. Working Group meetings have also produced

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numerous engagement strategies for U.S. policymakers, and highlighted the context in which these strategies could be implemented.

I. THE WORKING GROUP ON ENVIRONMENT IN U.S.-CHINA RELATIONS

The Woodrow Wilson Center's Working Group on Environment in U.S.-China Relations, coordinated by the Environmental Change and Security Project in partnership with the Center's Asia Program, is an ongoing multidisciplinary forum for discussion of environmental and foreign policy concerns. The aims of the Working Group are to: (1) identify the most important environmental and sustainable development issues in China and discern how those issues relate to U.S. and Chinese interests; (2) develop creative ideas and opportunities for government and nongovernment cooperation on environmental projects between the United States and China; and (3) discuss how environmental issues can continue to be a building block in improving U.S.-China relations.

The Working Group has had particular success in drawing upon the expertise of its over forty members, which include government, NGO, academic, and private business representatives. Working Group speakers have represented a broad mix of backgrounds, ranging from China scholars to government officials and World Bank representatives. Working Group meetings are co-chaired by Elizabeth Economy of the Council on Foreign Relations and P.J. Simmons of the Carnegie Endowment for International Peace, and are held on a not-for-attribution basis.

Small group sessions of the Working Group concentrate on more specific topics of interest and have included visits by Qu Geping, Chairman, Committee on Environmental Protection and Natural Resources Conservation, National People's Congress; and the Citizen Involvement in Environmental Protection Delegation from the People's Republic of China.

II. MAIN THEMES OF WORKING GROUP DISCUSSION

During the first six months of Working Group discussion, the following three strategies were identified as key to engaging the Chinese on environmental issues.

A Clearly Defined and Articulated China Policy

The relationship between the United States and China is complex; while progress has been achieved on many issues in recent years, others still raise considerable tension. Changes in both U.S. and Chinese policy (such as the linking and then delinking of human rights to trade on the United States side, and the differing levels of aggression towards Taiwan on the

Chinese side) have created corresponding fluctuations in the warmth of U.S.-PRC relations. It is not unreasonable for the Chinese to view U.S. policy as a see-saw which balances itself according to pressures from Congress, the public, or the media. To combat this Chinese perception and to enhance domestic credibility on relations with the Chinese, many Working Group members argued that the most important action the U.S. government could take would be the formulation of a clearly articulated, coherent China policy with explicit objectives and guidelines by which progress on a variety of issues could be measured. Such a policy was considered to be a means to avoid the public perception that policy changes are the result of economic incentives or "pandering" to Chinese interests.

Financing Mechanisms for Environmental Projects

The Chinese are frequently critical of U.S. government offers of environmental assistance because the United States rarely backs up its promises with strong funding mechanisms. Both the U.S. Agency for International Development (USAID) and its U.S.-Asia Environmental Partnership (USAEP), for example, are restricted from funding projects in China. American businesses with environmental technologies hoping to invest in rapidly expanding Chinese markets express similar discontent; they feel as though they are at a disadvantage vis-à-vis Japanese and European competitors who receive more financial assistance from their governments. This lack of U.S. financial assistance for Chinese environmental problems carries considerable impact; China's environmental markets are estimated at \$3.7 billion, with U.S. firms struggling to gain a foothold (*Asia Environmental Business Journal*, 1997).

While removing aid restrictions for China would ease this burden, Working Group members also suggested a number of alternative ways to help improve the current situation:

- Establish accepted international environmental guidelines and minimum specifications for projects funded by Organization for Economic Cooperation and Development (OECD) member countries, development agencies, or international banks. These guidelines would assist in halting large, environmentally unsound projects and would also help provide a level playing field for international businesses proposing projects in developing countries;
- Provide high level governmental support for environmental projects and business ventures in China to show the Chinese that these projects are considered a priority by the U.S. government; and
- Explore the possibilities for multilateral joint commercialization projects. For example, a project could capi-

talize on U.S. technological innovation, Taiwanese or Japanese financing, and Chinese labor to create a demonstration project in China. Transportation projects, such as upgrading China's rail transport system, would most likely provide the best opportunity for such joint commercialization efforts.

A Focus on Local Problems with Secondary Global Impacts

While the Chinese are clearly concerned about the environment, it is equally evident that they are much more concerned about domestic environmental problems (such as urban air pollution and water shortages) than global ones (climate change). This prioritization of environmental issues presents a conundrum for the United States, which places its priority on the global impacts of China's environmental problems, most notably carbon dioxide (CO₂) emissions that contribute to global warming. Working Group members agreed, however, that ignoring China's local environmental problems at the expense of global ones would be a significant barrier to U.S.-PRC cooperation on environmental issues; the U.S. government and NGOs should therefore concentrate on local Chinese environmental problems which have secondary global impacts.

For example, the Chinese will likely be much more receptive to assistance on reducing urban levels of suspended particulates after studies demonstrate the connection between these pollutants and high rates of urban lung cancer. Once the connection is made, assistance—and investment in the technology to reduce emissions—will be more openly accepted by the Chinese. The secondary impact of such emissions reductions would be ancillary reductions in sulfur and CO₂ emissions, thereby reducing greenhouse gases and the prevalence of acid rain.

III. CONCLUSION

While China's increasing greenhouse gas emissions are of clear importance to the United States, they should not be the only cause for U.S. concern; China's environmental and development choices have the potential to directly impact U.S. interests. Rising health care costs and crop losses due to pollution have the potential to disrupt China's economic growth and food security. Without assistance, the Chinese will be unable to meet their sustainable development—and their economic—goals: China needs support and advanced technology from developed countries to achieve its economic, development, and environmental objectives. Multilateral cooperation and a focus on domestic Chinese environmental issues with secondary global impacts will demonstrate the international concern about Chinese environmental problems while also addressing Chinese domestic environmental priorities. Continued bilateral engagement and cooperation with

Compendium of Working Group on Environment in U.S.-China Relations Meetings

5 February 1997

Chinese Energy Production

WILLIAM CHANDLER, Battelle-AISU; BARBARA FINAMORE, Natural Resources Defense Council; Will Martin, NOAA; Robert Price, Department of Energy

26 February 1997

Energy Policy Options for U.S. Decision Makers

5 March 1997

Context for U.S.-PRC Cooperation in the Energy Sector

JOHN SAMMIS, Department of State; ROBERT SUTTER, Congressional Research Service

2 April 1997

Transportation Options and Trends in China

EVA LERNER-LAM, The Palisades Consulting Group; JULIA PHILPOTT, International Institute for Energy Conservation

7 May 1997

The Chinese Political Economy and Central-Local Government Dynamics; Urban, Township, and Village Air Pollution

KENNETH LIEBERTHAL, University of Michigan; HU MIN, Peking University; KAREN POLENSKE, Massachusetts Institute of Technology

7 May 1997

Discussion with the Chinese Citizen Involvement in Environmental Protection Delegation

19 May 1997

Discussion with QU GEPING, Chairman, Committee on Environmental Protection and Natural Resources Conservation, National People's Congress

4 June 1997

Bilateral Relations on the Environment: Successes and Failures from the U.S. and Abroad

RICHARD LOUIS EDMONDS, University of London; JONATHAN MARGOLIS, Department of State; MIRANDA SCHREURS, University of Maryland

2 July 1997

Hydroelectricity and Nuclear Energy in China

MARCIA ARONOFF, Environmental Defense Fund; TODD JOHNSON, World Bank; MICHAEL MAX, Stanford University; ROBERT PRICE, Department of Energy; WILLIAM SPODAK, Strategic Consulting Alliance; BARRY TREMBATH, World Bank

10 September 1997

An Overview of Chinese Water Issues

FREDERICK CROOK, Department of Agriculture; DANIEL GUNARATNAM, World Bank; DAN MILLISON, Ecology and Environment, Inc.; SUSAN WARE, NOAA

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1 October 1997

***Chinese Fisheries and
International Cooperation on Oceanic Issues***

STETSON TINKHAM, Department of State;
ZHI WANG, Department of Agriculture

5 November 1997

Hazardous Waste and Urban Water Scarcity in China

JACK FRITZ, World Bank; ELLEN SPITALNIK, Environmental Protection Agency

5 November 1997

Reservoir Resettlement in China: World Bank Experience

GORDON APPLEBY, Economic Development Institute; BARRY TREMBATH, World Bank; WARREN VAN WICKLIN, World Bank;
THOMAS RHYSS WILLIAMS, George Mason University; MARTIN TER WOORT, World Bank; ZHU YOUXUAN, World Bank

3 December 1997

***Water and Agriculture in China, and
Chinese Watershed Management Practices***

DENNIS ENGI, Sandia National Laboratories; LEE TRAVERS, World Bank

7 January 1998

Chinese Transboundary Water Issues

JASON HUNTER, The Nautilus Institute; DOUG MURRAY, National Committee on U.S.-China Relations; GRAINNE RYDER,
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4 February 1998

***Summary Session of Working Group
Discussion on Water Issues***

ABIGAIL JAHIEL, Illinois Wesleyan University; JAY STEWART, Ogden Environmental and Energy Services Company;
CHANGHUA WU, World Resources Institute

4 March 1998

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***Financing Environmental Protection in China:
The Role of Foundations and NGOs***

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China's Food Security

LESTER BROWN, Worldwatch Institute; LINDA WIESSLER-HUGHES, National Intelligence Council;
HUNTER COLBY, U.S. Department of Agriculture

China on environmental issues will facilitate the transfer of American environmental technologies to China and will further support the work of environmental NGOs establishing partnerships and programs in the PRC.

The meetings of the Working Group on Environment in U.S.-China Relations have identified key engagement options while also exploring China's energy sector choices and water-related problems. Working Group members believed that support for U.S. businesses marketing environmental technologies in China should be a priority for the U.S. government. Since the U.S. government is currently unwilling to increase significantly its financial commitments to support environmental protection measures or technology transfers to China, it should attempt to open doors for those who can—namely private firms. In doing so, the United States could help bring environmental remediation technologies and alternative fuel sources to the Chinese while opening markets for U.S. firms and products.

At the same time, the U.S. government and NGOs should support and assist China in developing policy changes in the energy and water sectors, especially through multilateral fora on the environment. Working in tandem with private businesses, NGOs and foundations offer the best external hope for encouraging Chinese sustainable development.

Cooperation on a variety of levels is necessary for water quality and quantity in China to improve. China's water problems are not dissimilar from those experienced in the United States; academic and governmental exchanges could greatly reduce water shortage difficulties by introducing new irrigation techniques and comprehensive watershed management plans. In many ways, China's water problems will be solved more through policy changes than technological fixes.

Through continued engagement and explicit support for environmental projects, the United States can provide a framework within which businesses, NGOs, and foundations can successfully promote Chinese environmental improvements. Such cooperation is vital if the United States aims to effectively assist the Chinese in their economic and environmental development. Only under such a scenario can the United States hope to have a positive influence on future Chinese energy choices and on a Chinese development pattern that is environmentally sensitive for both China and the world.

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¹ In June, 1997 China began phasing out the use of leaded gasoline in Beijing and Tianjin to help reduce automobile emissions. While this policy is unquestionably a move in the right direction, Chinese emissions will continue to increase in the future; automobile ownership in China, for example, expanded from 710,000 in 1991 to 1,500,000 in 1995 (*China Environment Series*, 1997).

² The World Bank estimates that 178,000 people in major Chinese cities suffer premature deaths each year from pollution, and mortality rates from chronic obstructive pulmonary disease are five times those in the United States (World Bank, 1997; Mufson, 1997). The World Bank also estimates that air and water pollution damages equaled roughly 8 percent (\$54 billion) of the Chinese GDP in 1995 (World Bank, 1997).

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The Findings of the Environmental Scarcities, State Capacity and Civil Violence Project: China, Indonesia and India

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[Editor's Note: The following summaries are from the Project on Environmental Scarcities, State Capacity, and Civil Violence, a joint project of the University of Toronto and the American Academy of Arts and Sciences. This meeting addressed these studies.]

SUMMARY OF THE CHINA CASE STUDY

by Elizabeth Economy

Since 1978 and the onset of reform in China, water scarcity in many regions of China has intensified. Unrestrained economic development and rapid societal change without attention to the ramifications of these transformations for the environment and natural resource use have placed China's already threatened water supply under tremendous stress. Population and water use per capita are growing; the physical condition of China's water facilities is aging; competition between the potential uses for water is increasing; aquifers are becoming depleted; water pollution is rising; and the societal costs of subsidizing increased water usage are increasing.

Chinese residents currently face a shortage of 28.8 million cubic meters of water daily. According to one Western expert, these shortages cost the Chinese economy between 5 billion yuan and 8.7 billion yuan¹ (US \$620 million and US \$1.06 billion) in 1990. The China case study examined the impact of growing water scarcity on state capacity. Perhaps surprisingly, it concludes that while water scarcity contributes to diminish state capacity, it does so primarily in an indirect manner and over the long term. The more compelling story is that political and economic reforms are transforming the very nature of the state. This process, in turn, has implications for the overall capacity of the state to develop and implement the policies necessary to respond to water scarcity in the PRC.

The reform process has ramifications for several characteristics of state capacity: the state's legitimacy, its fiscal strength, its coherence and its reach. Frequently, the relationship between the reforms and these factors is a negative one. The reforms have engendered an overwhelming emphasis on economic growth, a devolution of authority from central to provincial and local levels,² an institutionally weak environmental protection bureaucracy especially relative to other industrial and economic agencies, and corruption at all levels of the Chinese bureaucracy. These trends all contribute to diminish the efficacy of the state. At the same time, the reforms also contribute to enhance state capacity. Institutional innovation within the system of environmental protection has extended the reach of the state. Moreover, greater openness to the international community has enhanced its fiscal strength.

The reform process also has a more direct impact on levels of water scarcity. Continued population growth, rising standards of living, and rapid industrialization intensify the problem of scarcity in water resources. Water use per capita is growing, competition between the potential uses for water is increasing, and water pollution is rising.

The picture that is painted by these trends is a complex one. The Beijing leadership recognized that the reforms have diminished state capacity as well as contributed to a growing range of natural resource related problems. However, its legitimacy is rooted in the continued exponential economic growth that these reforms

have engendered during the past almost two decades. Thus, while Beijing is racing to redress the negative institutional and environmental ramifications of the reforms through campaigns, exhortations, and new laws, it is not willing (or in some cases not able) to implement policies that might slow the pace of economic development, such as raising the price of water, increasing pollution discharge fees, or devoting sufficient state financial resources for local water conservation or waste management projects.

In this scenario of overall diminishing state capacity and growing demand for resources, the impact of water scarcity on state capacity might be expected to be dramatic. However, it is not. In some respects, the potential negative ramifications are mitigated by opportunities presented through the transformation of state capacity by the reforms. Nonetheless, there are important signals that over the longer term, water scarcity may indeed significantly diminish state capacity in several key areas.

Both demand- and supply-induced scarcities of water are increasing demands on the state for new infrastructure such as dams, canals, wastewater treatment facilities, and irrigation systems. This is placing greater stress on the fiscal strength of the state. Beijing has attempted to shift a greater portion of the burden of financing these projects on to the local and provincial governments as well as the international community. In many cases, however, the provinces lack the resources to make such substantial investments. Even Beijing has been stymied by the overwhelming costs

associated with its desired river diversion project. In response to the growing responsibility of local leaders to pay infrastructure costs, they have used China's integration with the international community to turn to the international community for substantial funding assistance for these infrastructure projects.

While the short-term implications of this behavior appear relatively benign, there are potentially quite serious longer range ramifications for state capacity. First, the autonomy of the state may be diminished by a greater reliance on foreign lenders. These lenders not only provide financial aid but also insist on additional politically sensitive measures such as pricing reform. In addition, a diminished role for Beijing in the financing of projects and greater dependence on local sources of funding also suggests a longer-term decline in the reach of the state that will not be limited to resource management issues. Local leaders, especially at the provincial level, have become increasingly vocal in their opposition to some state policies. For example, the Sichuan governor's vocal response to Beijing's inadequate financial contribution for resettlement engendered by the Three Gorges Dam indicates a threat to legitimacy of the state. In its most extreme form, this loss of legitimacy and decline in the reach of the state contribute to social instability and violent demonstrations of the sort that have occurred among those slated for resettlement or already displaced along the Yangtze River.

Both demand- and supply-induced water scarcity result in substantial interprovincial conflict. Contin-

THE CASE STUDY OF BIHAR, INDIA

by Thomas Homer-Dixon and Valerie Percival

Despite robust economic growth in the last few years, India is beset by a daunting combination of pressures. Population growth stubbornly remains around 2 percent; the country grows by 17 million people a year, which means its population doubles every 35 years. Demographers estimate that—even under the most optimistic estimates—India's population will not stabilize below 1.7 billion. Cropland scarcity and degradation affect large areas of the country. While data on the state of India's forests are of low quality, fuel-wood shortages, deforestation and desertification can be found over wide areas.

Resource scarcities in many rural areas, combined with inadequate opportunities for alternative employment, have produced rural-urban migration. The growth rate of India's cities is nearly twice that of the country's population. Their infrastructures are overtaxed: Delhi now has among the worst air pollution of any urban area in the world, power and water are regularly unavailable, garbage is left in the streets, and the sewage system can handle only a fraction of the city's wastewater.

India's recent urban violence was concentrated in the poorest slums. Moreover, it was not entirely communal violence: Hindus directed many of their attacks against recent Hindu migrants from rural areas. The rapidly growing urban population also leads to evermore competition for limited jobs in government and business. Attempts to hold a certain percentage of government jobs for lower castes have caused inter-caste conflict.

These pressures express themselves in a social environment already stressed by corruption and communal animosity. Political parties, including the Congress Party, increasingly promote the interests of only narrow sectors of society. The central government in Delhi and many state governments are widely perceived as incapable of meeting the society's needs and have lost much of their legitimacy.

ued population growth, as well as increasing demands from industry and agriculture, contribute to diminish the coherence of the state by engendering a growing number of interprovisional claims to these water resources. Rising pollution levels also result in growing interprovisional disputes over the responsibility and costs of treatment facilities and clean-up costs. These problems are endemic with little prospect for immediate resolution. Moreover, Beijing has yet to develop an effective mechanism for resolving such conflicts.

Water scarcity and pollution also occasionally have triggered violence in rural and urban areas. There is no evidence that these are more than isolated incidents with limited ramifications over the long term. It is worth mentioning, however, the extreme scenario in which security continues to grow, especially in urban areas, and a more sustained challenge to the state is posed. In continuation with a contraction in the economy and the continued spread of corruption and abuse of power at both the elite and local levels, a much more threatening form of urban civil violence, involving migrant workers, unemployed state enterprise workers, grain-short urban dwellers, and disgruntled peasants, might arise.

In the final analysis, water scarcity probably does not pose a substantial or direct challenge to state capacity. Moreover, as provincial and local regions grow wealthier, they may replace the center as the primary initiator and financial sponsor of environmental protection policies. Thus, while state capacity may be diminished in some respects, other elements of the state may emerge to respond more effectively to regional water demands. In this context, water scarcity in China should be considered a long-term threat to continued economic growth and state capacity that has yet to be acknowledged fully by the Chinese leadership. Even so, it remains a challenge that China may well meet as the economic and political reform process evolves.

¹ Vaclav Smil, *Environmental Problems in China: Estimates of Economic Costs*, East-West Center Special Reports, No. 5 (April 1996): 55.

² This process is not uniformly negative for state capacity.

by Charles Victor Barber

Indonesia is the world's fourth most populous nation, and the planet's largest archipelago. Blessed with abundant natural resources and one of the earth's greatest assemblages of biological diversity, Indonesia is nonetheless among the poorest nations in the mid-1960s, with a per capita income of just \$50¹ and its economy in shambles. Since coming to power following a spasm of civil violence sparked by an attempted coup in 1965—events that left as many as 500,000 dead—the “New Order” regime of President Soeharto has utilized exploitation of the archipelago's rich natural resources—primarily oil, timber, and minerals—to jump start and sustain a process of economic development that the World Bank has praised as “one of the best in the developing world.” The economy grew at nearly 8 percent annually in the 1970s, and despite external shocks averaged 5.3 percent in the 1980s. Per capita income has risen from \$50 in 1967 to \$650 today, and poverty has been cut from 60 percent to an estimated 15 percent of the population.

The regime has, however, used natural resources as more than timber for economic growth. The delivery of tangible development benefits—increased food production, roads, schools, health care, and the like—to a large segment of the populace, made possible by revenues from resource extraction has helped ameliorate long-standing social cleavages within Indonesian economy and society and cement allegiances to the regime.

Natural resources—and resource policies—have also been used to strengthen various dimensions of the New Order's state's capacity. Natural resource revenues have provided a strong financial basis for strengthening state power, while natural resources policies have provided an important vehicle for projecting New Order values and priorities throughout society.

In this process, new conflicts have arisen between state-led resource extraction activities and local communities deprived of their long-standing access to forests and other resources. Up until now, the regime has been relatively successful in localizing, suppressing, or resolving these conflicts far short of the point where they might, taken together, pose a threat to the regime's capacity or stability.

The state's ability to contain conflict over natural resources has depended, though, on particular circumstances: abundant natural resources; continued economic growth and poverty reduction for many; an efficient and heavy-handed military intelligence and domestic security apparatus; transformation of the electoral process into a state-controlled mechanism for reinforcing regime legitimacy; a quiescent and

For more information on the Project on Environmental Scarcities, State Capacity, and Civil Violence, go to the Project's website at <http://utl1.library.utoronto.ca/WWW/pcs/state.htm>

depoliticized peasantry and urban workforce; the continuity of President Soeharto's thirty-year rule; and a small and politically quiescent middle class willing to accept authoritarian politics in exchange for growing economic prosperity.

All of these conditions are changing rapidly in the mid-1990s: Conflicts over natural resources are not as "local" as they once were, due to the globalization of communications and strengthened international human rights and environmental advocacy networks. The international development Zeitgeist has changed in thirty years from a single-minded focus on "economic growth" to "sustainable development," with growing attention to environmental, social, and human rights concerns. It is no longer as acceptable to "break a few eggs" locally in order to make an "omelet" of national economic growth. And as Indonesia takes a higher profile on the international stage (chairing the Non-Aligned Summit in 1993-1994 and hosting APEC in 1994, for example), the government is more sensitive to international opinion.

The natural resource base of the country is increasingly degraded, leaving less for the regime to exploit, and less for the growing rural population to seek its livelihood from. Forests, for example, are declining by as much as 1 million hectares per annum, and Indonesia is expected to become an oil importer early in the next century. At the same time, while the relative share of primary commodities in total GDP has declined from 60 percent in 1970 to 39 percent today, and will likely reach 17 percent by 2010, the absolute value added from primary commodities in total GDP has declined from 60 percent in 1970 to 39 percent today, and will likely reach 17 percent by 2010, the absolute value added from primary commodities has more than doubled over the past twenty years, with nonrenewables (oil, LNG, minerals) up 128 percent and "renewables" (agriculture, fishing, and forestry) up by 91 percent. The total value of these sectors is expected to increase by 50 percent by 2010. Thus, while the regime will continue to rely on natural resources, it will do so in the face of growing absolute scarcities, pressures to conserve, and increasing demand from growing rural populations.

Indonesia's economy and society have changed dramatically since the 1960s, and the pace of change is accelerating, leaving a transformed sociopolitical landscape in its wake. The economy grew at nearly 8 percent annually in the 1970s, and despite external shocks averaged 5.3 percent in the 1980s. The manufactured goods sector has grown by an average 11 percent annually since 1986. Per capita income has risen from \$50 in 1967 to \$650 today, and poverty has been cut by two-thirds, and life expectancy at birth has increased by twenty years (almost 50 percent). Fifteen percent urban in 1970, the country's population is already 30 percent urban today, and may reach 50 percent by 2020. The regime's impressive development achievements

have created a wholly new class of educated, increasingly mobile, urban, and informed people with greater expectations for political participation and less tolerance for autocratic or corrupt behavior on the part of government officials and agencies.

The concentration of natural resource-based wealth in the hands of a small political-economic elite, in which the president's family is very prominent, is under growing attack from many parts of society. The power and conspicuous consumption of these elites—often ethnic Chinese in league with members of the president's family and other regime figures—is increasingly unacceptable to a general public long suspicious of the country's wealthy Chinese minority; to the rising middle class which sees its own business prospects constrained by cronyism; and to elements within the military and civilian state elite itself who see the growing power and profile of the Chinese conglomerates and "the kids" as obstacles to a smooth presidential succession, and as a potential source of general social unrest and political opposition.

President Soeharto, 75, has been in power since 1966, no clear successor is in view, and there is no reliable—or even tested—mechanism for managing this crucial political transition. The sudden death of his wife in May 1996 and a highly publicized trip to Germany for medical treatment a few months later put these questions front-and-center. Soeharto is the linchpin and the symbol who holds the New Order Regime—and hence the current stability and prosperity of Indonesia—together.

It is unclear exactly what the "Indonesian state" is apart from the New Order regime, and it is equally unclear what the New Order without Soeharto will look like.

As current trends and events play themselves out over the next decade, it seems unlikely that the regime can continue to contain growing conflicts over natural resources, continue to appropriate the resource rents needed to maintain the support of clients and the bureaucracy, or sustain the cohesion of the elite interests and actors who constitute the power centers of the regime. With three-fourths of the nation claimed as "state forested" and the pressures on those lands building, for example, forest lands and resource conflicts are likely to intensify far beyond the current situation.

Indonesia holds the second largest tract of tropical forests on the planet. Currently thought to cover some 92-109 million hectares—an expanse second only to Brazil's—they blanketed more than 150 million hectares—over three-fourths of the nation—as recently as 1950. In the Outer Islands, many forest areas have long been home to indigenous groups which gained their livelihoods from forest farming, hunting, and gathering.

Since the late 1960s, these forests—and the lands on which they grow—have played important roles in

the political and economic strategies of the New Order. They have been a substantial source of state revenue, a resource for political patronage, a safety valve for scarcities of land and resources in densely populated Java, and a vehicle—through the policies applied to them—for penetrating New Order ideological, political, security and economic objectives into the hinterlands. In short, forest lands, resources, and policies have been a key arena for the New Order's program of economic development, political control, and social and ideological transformation.

Under these circumstances, it is not surprising that forests have become the arena for increasing levels of conflict, sometimes violent, between the interests of local communities on the one hand, and those of the state, its clients and agents on the other. Allocation of the huge resource rents derived from commercial forest exploitation—such as the \$1.3 billion Reforestation Fund—have also recently provoked disputes within the elite.

These conflicts have potential to erode state capacity in various ways, although only the community-level conflicts have realistic likelihood of turning violent—some already have. Even short of violence, local forest conflicts are poisoning relationships between local communities and government agencies and increasing local resistance to both forest production and conservation efforts. And conflicts within the elite over the distribution of forest resource rents threaten to weaken the coherence of power centers within the New Order constellation. As these conflicts grow, they are compounded by intensifying absolute scarcity of forest resources and intensifying population pressures on the forest frontier.

The ability of the regime to respond to these snowballing pressures and conflicts is limited by forest policy choices made over the past few decades. From nearly nothing in 1966, the timber and forest products industry has with the state's active support grown into a highly concentrated, wealthy, and well-connected political and economic actor dependent on cheap raw materials, used to high levels of profit, and accustomed to passing the environmental costs of unsustainable logging practices to local communities, the state, and society at large. The industry is now a significant factor in forest policy-making and thus lessens the autonomy of the state to move policy in directions that might be more sustainable but would hurt the industry.

At the same time, just as consensus is growing among forest management experts and many government policy makers—not to mention nongovernmental organizations and donor agencies—that sustainable forest policies must grant local communities greater access and more participation in management, the state's capacity to work with or even listen to local communities is severely constrained by three decades of

“top-down” development policies and the erosion of community management capabilities caused by these policies.

Moreover, the New Order's capacity to adapt its policies to deal with these growing conflicts is weak, in contrast to the nimbleness of its macroeconomic policy-making in recent years. The choices and policies of the New Order over the past three decades developed from the perceptions and experiences of its leaders during the first twenty years of Indonesia's independence, and the violent transition from Old Order to New. Those policies have served the internal interests of the state well over the past three decades. And they have delivered sustained and broad-based economic and social development to the majority of Indonesia, although they have also been the cause of a great deal of oppression and suffering for some. But the regime now seems bereft of ideas, mechanisms, and skills to adapt to the rapid changes engulfing the archipelago in the late 1990s. Unless the dormant reserve of political and social ingenuity is soon tapped, the impressive development gains of the past three decades may prove fragile in the face of growing conflicts over forest and other natural resources, and the broader societal conflicts which they mirror.

And the challenges of the next few decades will require vast amounts of ingenuity to surmount. By 2020, Indonesia's population will likely rise from 180 million to nearly 260 million, a 45 percent increase. Fifty percent of that population will be urban, up from 31 percent in 1990, putting pressure on Java's irrigated rice lands, some 10 percent of which may be converted to municipal and industrial uses over the next two decades. Total GDP will increase by 320 percent over 1990, and fully 63 percent of it will come from manufacturing and services by 2010. Demand for petroleum products by 2020 will expand nine-fold, and the demand for electricity thirteen-fold. Proven oil reserves will be exhausted by about 2015 even at current rates of extraction, and the production of coal and natural gas will have skyrocketed. With rapidly rising demand, though, it is likely that Indonesia will be a net oil importer by as soon as 2000.

In the forestry sector, as current deforestation rates continue, an additional 15 million to 32.5 million hectares of forest will be lost by 2020. And the demands for agricultural land, timber plantation sites, and coal mining will increasingly compete with logging, intensifying pressures and probably increase the deforestation rate. If demand for wood continues to climb at present rates, a serious timber shortage seems likely. And while the timber plantations are the cornerstone of the government's strategy to bring supply in line with demand, the bulk of current investment in timber plantations are for stock to feed the new and rapidly expanding pulp and paper industry, not to replace timber now coming from the natural forests.

To ameliorate growing scarcities of renewable resources, minimize the spread of scarcity-induced conflicts, and protect the capacity of the state from erosion, the New Order must take its “ingenuity gap” seriously, and take steps to close it. Failure to unfetter the generation and delivery of ingenuity needed to deal with the complex challenges of the next few decades will stunt the ability of both state and society to counter the impacts of growing resource scarcity. These challenges include intensifying social conflicts (some violent), impediments to the continued growth of the economy, rising social dissatisfaction and serious threats to the legitimacy and overall capacity of the Indonesian state. Failures of ingenuity are likely to reinforce themselves: lack of creative state adaptation to increasing scarcity and conflict may in themselves even further limit the state’s ability to respond effectively. As conflicts grow more severe, the state may cut itself off from innovative solutions that might otherwise arise from local communities and other elements of civil society.

This need not be. Indonesia’s rich resources and incredible diverse cultures provide the basis for rapid and sustained increases in ingenuity equal to the challenges of rising population and consumption, a fixed resource base, and growing scarcities. The history of Java, where nearly 100 million people—65 percent of the population—live on 7 percent of the country’s land, shows the potential of the Indonesian people for pro-

ductive social and technical adaptation to the growing scarcity (although other islands, with far poorer soils, could not support anything near Java’s population density). The “portfolio” subsistence strategies of many Outer Islands peoples—in which reliance on a wide variety of crops and income sources secures the people against scarcities of any source—provide another important example.

Nor is the New Order state apparatus itself bereft of ingenuity by any means. The dramatic economic rise of Indonesia since the 1960s, the major strides made against poverty and illiteracy, and the deft handling of global economic turbulence in the 1980s amply illustrate the ability of this regime to produce ingenuity and act upon it. Anyone who has spent time working with officials of the Indonesian government will attest that there are untold numbers of them bursting with innovative ideas—both visionary goals and rudimentary practicalities—on how to better realize the goals of sustainable development, stability, and equity. If the combined ingenuity of the state and society can be unleashed from the outmoded and harmful structures, attitudes, and webs of special interests that have developed over the past thirty years, Indonesia will stand a good chance of surmounting the challenges of resource scarcity that all of humanity faces on the cusp of the twenty-first century.

¹ The dollar amount (\$) mentioned in this paper represent U.S. dollars at the exchange rate as of May 1997.

9 May 1997

Civilian-Defense Partnerships on Environmental Issues: Past Lessons and Successes, Potential Pitfalls, and Opportunities

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DoD ROLE/CONTRIBUTION/COMPARATIVE STRENGTHS/FUTURE PLANS

SHERRI W. GOODMAN

The Department of Defense has a long history of working to protect the environment. There are now over eight thousand environmental professionals working in the Department of Defense. Senator Inhofe, chair of the Armed Services Subcommittee on Military Readiness, said last month that environmental issues affect the quality of life, military training, and readiness of our military facilities.

We now realize that there is a linkage between environmental degradation and resource stability around the world. In his Earth Day remarks this year, Defense Secretary Cohen said, "environmental protection is critical to the Defense Department mission, and environmental considerations shall be integrated into all of its activities." We have evolved from perceiving environmental considerations as a strain on military activities to viewing them as opportunities to serve as good stewards. From the top generals to the newest recruits, the military today makes environmental protection a matter of business.

At home we are committed to building partnerships with other agencies like State, EPA, Energy, and with citizens and non-governmental organizations. One of the things that we are trying to bring to the table is our ability to work with the different militaries around the world. We have tried to reach out with a regional approach, working closely with the unified commands within the Department of Defense: Southern Command for the Western Hemisphere, European Command for Europe and Africa, Pacific Command for the Asia-Pacific region, Central Command for the Middle East, and then Atlantic Commands for the Atlantic area. Whether regionally or with individual militaries, DoD's environmental experts can help build institutional and intellectual capacity within these nations to address environmental issues.

We are working under the terms of our Memorandum of Understanding (MOU), with EPA and DoE to leverage the resources that our agencies have. For example, there is an effort among Russia, Norway, and the United States to bring U.S. environmental management techniques and methods to the Russian military, particularly the Russian navy. The Russian navy's activities include operations in the Kola peninsula, which is not far from the Norwegian border. As virtually any Norwegian will tell you, the threat Norway feels from Russia today comes not from weapons, but from contamination by Russian fleets very close to the Norwegian border. The Norwegian defense minister approached the U.S. Secretary of Defense in June 1994 and asked for help in engaging the Russian military on these issues.

In September 1996, Secretary of Defense William Perry and the Russian and Norwegian defense ministers signed a Declaration on Arctic Military Environmental Cooperation (AMEC). Since then, the U.S., Norwegian, and Russian militaries have combined their efforts to begin applying modern environmental management techniques to address military-related radioactive and non-radioactive problems in the Arctic. We are working on supporting Russian efforts to use proper environmental methods in their submarine dismantlement procedures. To build trust and cooperation with the Russian military, we share information and provide training, teaching, and education.

We think that through global engagement, we can promote democratization and very importantly, civilian control of the military. Our activities show great promise in fostering international security and regional stability.

**DoE ROLE/CONTRIBUTION/COMPARATIVE STRENGTHS/
FUTURE PLANS
MARC CHUPKA**

Environmental problems vary from region to region and in time span. Some problems are immediate, and some are longer term.

One environmental problem in particular directly relates to the stability in Russia and the Newly Independent States. Civilian nuclear reactors may affect the health of local and regional populations. Everyone may recall the destabilizing effect of the Chernobyl catastrophe on the region and on the environment, the health of the people, and the government. Nuclear weapons clearly present an environmental security problem.

In Central and Eastern Europe, definitions of security are expanding. Providing such services as clean water, healthy air, environmental protection, and economic support is essential to the countries' collective strength and viability. Environmental components to development become part of the security equation.

The Department of Energy has been engaged in dismantling the nuclear legacy of the Cold War here and abroad. We now know that environment and security are linked. One of our major responsibilities relates to controlling nuclear weapons and materials. Our focus on energy security traditionally concerns global oil markets as our nation's main energy provider. To secure our energy sources, we must invest in clean and efficient energy production.

The Department of Energy can make an impact in many different areas by improving science and technology. The DoE's enormous investment in high performance supercomputing has allowed us to keep our nuclear deterrent viable without actually testing weapons. These same computational capabilities help us to study weather patterns, the evolution of ecosystems, the dispersal of pollutants, and global climate change.

One project that we are working on involves improving nuclear safety in Russia. A major effort goes into the transport of weapons-grade materials. Under Project "Sapphire," we moved about 600 kilograms of highly enriched uranium that we got out of Kazakhstan in 1994.

We are also focusing on the safety of nuclear facilities. Since Russian facilities that house high demand substances have sleeping guards, rusty padlocks, and fences with holes, we find ourselves in an incredibly dangerous situation. We are working with the DoD and the EPA on the AMEC treaty, and we are also work-

ing with officials from several Nordic countries on a site in Estonia.

Our most extensive programs are geared towards improving the safety of Soviet-designed nuclear reactors. In the past five years, we have actually been involved in safety operations at twenty reactor sites with sixty-four operating reactors in eight countries. We have also been working in Poland and Hungary to reduce emissions from coal power generating facilities, increase efficiency, improve waste water treatment facilities, and clean-up some contaminated sites.

Our agency's ability to lead on some environmental security issues—regional or global—depends on continued support. I think the American people will support our efforts, if we continue to reap benefits on both the environmental and security sides.

**EPA ROLE/CONTRIBUTION/COMPARATIVE STRENGTHS/
FUTURE PLANS
WILLIAM NITZE**

The idea behind the new cooperation on the environment (with the Department of Energy and the Department of Defense) is that the definition of national security has expanded to include conflicts caused by environmental degradation.

From the EPA's perspective, environmental security can best be described as a process whereby the solution for an environmental problem figures into national security objectives. Each environmental activity complements other major goals of this administration. With the help of a participatory democracy, nongovernmental organizations, open processes for resolving conflict, and laws and statements, we would like to enhance environmental performance.

The EPA mission statement asserts that EPA will work with other key agencies to minimize environmental problems in the Ukraine as well as in other countries that may over time have significant negative impacts on U.S. security. The philosophy behind this mission statement is to avoid border patrol solutions, by making it more attractive for people to live under stable conditions at home rather than to immigrate to the United States and other developed countries.

Because human pressure on the environment has grown, the environment has become a much more important component of what I call the civil society challenge. We have to work with investors and other groups to transfer environmentally-friendly technology that stimulates investment, builds jobs, promotes economic opportunity, and improves the quality of life. Properly conceived environmental security programs will be able to achieve all of these goals.

For example, the Murmansk Project grew out of Russia's noncompliance with the prohibition in the London Dumping Convention against the disposal of radioactive material at sea. We managed to get agree-

ment from the U.S. government to proceed in expanding Russia's facility for treating low-level liquid radioactive waste in Murmansk. By transferring technology and creating investment opportunities in Murmansk and across Northwest Russia, we have helped Russia begin to implement a broader radioactive waste management strategy.

In the Baltics, we had a very strong environmental relationship both on the civil and military fronts. The Baltics share development interests with Poland and the Ukraine. The Poles actually have a development assistance program directed towards training the Ukrainians. In Estonia, we hope to up-grade a rare-earth metals facility, so that the facility can supply valuable rare metals for defense and other uses.

When dealing with a contamination problem, we need to convert defense facilities to other uses, transfer technology, create commercial opportunities for U.S. firms, and protect and create jobs in local economies. As we gain more confidence in environmental development, we will strengthen both regional and global security.

STATE DEPARTMENT PERSPECTIVES
JONATHAN MARGOLIS

International environmental issues have wide-ranging political, economic, and social implications, and, therefore, increasingly are and should be an integral part of the conduct of foreign policy. To meet this challenge, the State Department is pursuing both global and regional strategies. This initiative is referred to as Environmental Diplomacy.

Global environmental problems, such as climate change, the flow of toxic chemicals and pesticides, species extinction, deforestation and marine degradation respect no border, and threaten the health, prosperity, and jobs of all Americans. They threaten our national security. Often, no one country is responsible for these problems. Many nations have contributed to their causes, and they can be addressed effectively only if the nations of the world work together, adopting and implementing policies that are result-oriented. It is, therefore, in our national interest to ensure that the international community takes steps to prevent and/or mitigate the potential harmful affects associated with these global environmental problems. We use diplomatic efforts to negotiate framework agreements and conventions, and to work bilaterally with key allies to address these global problems.

Some environmental problems require cooperation by countries of a particular region to solve. Regional issues include clean air and water, water scarcity, energy, land use, and urban/industrial growth. By their nature these transboundary issues involve multiple actors in a single region, and there's no clearly defined mechanism or institution to address these problems.

Water scarcity in the Nile River is an example of a regional environmental issue that can either lead to increasing tensions about that limited resource's use, or be a potential source for regional cooperation and integration. Using the Nile example, the State Department's role is to raise environmental issues and work towards solutions in the foreign affairs community, such as discussion on how to manage a river basin collectively, efficiently, and effectively. The implementation of these policies is then made by U.S. technical agencies working with their international counterparts.

The State Department will play a major role in raising the profile of global and regional environmental issues. Our goal is to bring other governments on board—especially in the developing world—recognizing that they may have competing interests. Balancing these competing interests and convincing countries that economic growth and sustainable development are not mutually exclusive is one of our major foreign policy challenges.

COMMENTARY ON CIVILIAN-DEFENSE PARTNERSHIPS
WORLDWIDE: LESSONS, SUCCESSES, POSSIBLE PITFALLS
KENT BUTTS

There is substantial potential for the type of civilian-defense partnership that proved successful in the Baltics. The U. S. National Security Strategy explains the benefits through its strategy of "shaping the international environment." This strategy recognizes that environmental issues are useful for reducing tensions among regional states and promoting cooperation and communication, often among formerly antagonistic countries. Thus, U.S. military support to regional environmental initiatives can be seen as a mission that promotes global security and reduces the likelihood of U.S. involvement in regional conflict or costly humanitarian missions such as Somalia and Haiti.

Often, a civilian government will recognize that it lacks the technical resources or manpower necessary to address an environmental issue. The military however, rarely wants to assume nontraditional missions because such missions often divert scarce resources away from operational readiness. Thus, an important first step in such relationships may be convincing the military that supporting environmental operations is beneficial. It is important to identify the degree of cooperative attitude present in the militaries and, when necessary, to dedicate resources to convincing the military that civilian defense partnerships are in its own best interest.

There are many regions and nations where civilian defense partnerships on the environment are logical and necessary. However, one must be particularly sensitive to regional attitudes and interagency relations within the countries involved. Important questions

include, What capabilities exist in the government or private sector for solving the environmental problem in question? In Zimbabwe for example, the U.S. Security Assistance Program, aimed at funding African militaries to perform biodiversity and conservation work, was thwarted by the fact that game-park management was the responsibility of the police, and U.S. laws prevented funding police activities. If sufficient governmental or private sector resources exist, encouraging the military to take over environmental missions could undermine private sector development.

Next, it is important to examine the reputation of the military. Is it oppressive? Is it feared or revered? In some countries in which I have worked, the military was a guarantor of the constitution and the people revered it. In such situations, involving the military in civil-military partnerships promoted governmental legitimacy. In many countries the opposite was the case. Nonetheless, the reputations and attitudes of the military can and do change; therefore it is important not to let the past sins of a reformed military preclude the creative use of that military to support a struggling democratic state. For example, when the Marcos regime was in power in the Philippines, the military was perceived as oppressive and supportive of a corrupt government. Today, under the Ramos regime, the military has a substantially different reputation and has been used repeatedly by the government's Department of Energy and Natural Resources to supplement its limited manpower and technical capabilities. The Philippine military has supported the government by serving as forest rangers, protecting rain forests from illegal logging, dedicating entire units to rainforest reconstruction programs, building artificial reefs, and protecting the complex 7,000 island marine habitat from illegal fishing.

When developing a potential program to promote civilian-defense partnerships in a region, the best source of information on the elements of such partnerships can be found on the U.S. Embassy country team. The Embassy can review the appropriateness of the plan, recommend how to succeed in that country, and, perhaps, suggest other donor nations, NGOs, or regional organizations with which a civilian-defense environmental partnership might also work. In addition, the Embassy would know how this program could be used to support other U.S. interests in the region.

Civilian defense partnerships have the potential to promote military support to democracy and provide technical and manpower support to resource-poor governments for solving environmental problems that threaten to undermine the health, welfare, and economy of the country. At the same time however, one must be on guard not to promote military involvement in environmental projects when this would provide a rationale for retaining a bloated military or when such a role would provide disproportionate importance

to a military that does not fully support the concept of civilian democratic rule.

GENERAL DISCUSSION

Comment: What are the estimates for the budget that the State Department is seeking? Has there been a lot of support from Congress and private donors?

Comment: We have an entire program for nuclear non-proliferation. The details are a little fuzzy right now, but I don't have any worries about the security of the budget.

Comment: We are pooling our resources. We leverage our people, divide training and technical assistance, and provide meetings and working groups. We are not trying to clean up fully the Cold War legacy, because we do not have the resources. Tax payers will invest just under 5 billion dollars a year for security. We also need to draw resources from other countries. We want all the participating countries, including Norway and Russia, to contribute as a sign of their commitment to address environmental protection.

Most of our budget is committed to core operations in North America, including Mexico. We may have an additional 2 to 4 million dollars in next year's budget for environmental security. We need to do a major marketing job, to get funds from other sources in the federal government. The U.S. private sector—and that could include small or medium sized companies—is looking for markets overseas and thus has an incentive to contribute to defense. Perhaps foreign governments can also contribute funds.

In the area of banishing nuclear materials, the United States is uniquely a market provider. Where other people have created nuclear messes, our expertise is needed. Radio-active waste management is not only a serious environmental project but also a huge leverage for the United States to use.

Comment: Please comment on the opportunities within the Russian military for downsizing or the potential for defense conversion.

Comment: The Russian military will always have a strong role. In the North Sea area, unfortunately, the Russian military is rather unenlightened. Understanding the problems of the locals, and the implications of what is going on, and dividing the resources necessary for education training would pay great benefits and would certainly indicate to our allies in the north that we recognize their needs.

Comment: We do work with militaries of other industrialized nations, and we have technology or practices that we would like to import into our own country. For

example, we are learning from the Scandinavian countries about new technologies. We worked with the Australians on clean up technology, and we try to bring those technologies or practices back into our own work. Under NATO offices, the handbook on environmental guidelines for the military sector has been shared with many militaries around the world, helping develop environmental programs in the military.

Comment: How will AMEC cope with Russia's inability to deal with certain projects?

Comment: That poses a very difficult problem. Russia lacks funds. How much money will the Russians put up for their projects? We have signed some project agreements already, and we are moving forward on these projects. We are also working closely with the Russian navy.

In Russia, if you think you've made two steps forward, you've usually also taken one and a half steps back. So, we have to be patient. Russia will continue to be a priority. We need Russia because of the importance of the Russian military.

To deal with the legacy of the Cold War, we will continue to work with countries. We have active engagements with Poland, the Czech Republic, and Hungary. The possibility might exist of having meetings with China in the near future, and we are now considering the Middle East as well.

Comment: I'd like to know what the next steps are in terms of priorities, regional issues, and areas of the

world where you may be focusing in the future?

Comment: What are our next priorities? One of the things that we are going to do is to set up a regional environmental house program, placing foreign service officers in various embassies around the world. This summer that program will actually join forces with the first six house operations in East Africa, Central America, the Middle East, Central Asia, East Asia, and Southeast Asia. Our next step will be to start various inter-agency teams to actually carry out some of the substantive activities that we have proposed.

Comment: We have shut down or redeveloped some of the military bases we have overseas. What new environmental and economic benefits have resulted?

Comment: Many of our activities overseas are advantageous to the U.S. We conduct health impact research on air pollution in China that produces results difficult to obtain in the United States. Scientifically, we have cleaned out our most obvious particulate and air pollution at a much lower cost. In Mexico, we had an Air Quality Management district try to build in El Paso. If we continue to provide such assistance, El Paso may be able to meet its own clean air goals. Activities in northwest Russia solve environmental problems by helping Russians manage radioactive waste.

Domestic leadership on global issues is strategically important. We can finally break through to a new level of political consensus on global climate change. We could indeed change the world.

May 21, 1997

Findings of the Pivotal States Project

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Paul Kennedy

The United States is the last remaining world superpower. For fifty years, the Cold War provided the overall structure for U.S. foreign policy, including its policies towards the developing world. The passing of the Cold War has led to a period of intellectual and political confusion. Most likely, the U.S.'s strategic priorities in the future will remain focused upon Europe, and NATO expansion in Russia, China and Japan. The United States will continue to have special strategic relationships with a small number of states: Israel, South Korea, Saudi Arabia, and Kuwait. And, the United States will keep a close eye on rogue states like Libya, Iraq, Iran, North Korea, and Cuba.

The other 130 states in the world represent about two-thirds of the population of the globe and about 75 percent of the member states of the United Nations. What should the sole remaining superpower's strategy be towards the majority of humankind, towards the developing world? The answer is the pivotal states strategy. While we do not believe that the United States should get involved everywhere on earth, we would like to raise the consciousness level of policymakers by establishing priority regions overseas. We are calling for the United States to pay special attention to the fate of a number of countries in the developing world, countries that we call pivotal states.

Today's threats in countries like Turkey, Algeria, Mexico, Indonesia, and Egypt come not from external aggressions but from internal social, demographic, and environmental pressures which strain the political process. Should some of those pivotal states collapse, American lives, business interests, and sea communications could be threatened. In this fractured, post-Cold War world, non-military sources of instability can easily have military consequences.

In focusing on pivotal states, we can make foreign policy more cost-effective, protect the global environment and achieve more effective arms control. We can also secure international understanding on important matters like intellectual property rights, trade abuses, child labor, illegal immigration, and human rights, and we can improve health in the developing world. Finally, we can use the United Nations and other international bodies more effectively, ensuring U.S. allies, like Israel, Australia, Japan, and Italy, regional stability.

The pivotalness of each state varies depending on geography and the extent of regional influence which a country leverages. We enjoy challenges to the selection of the nine states designated as pivotal.

Such interest in pivotal states reflects an increased willingness to define U.S. strategy in the developing world. What are our priorities? How can we explain them to a suspicious Congress? How can the United States help foster stability in the developing world? Given the vastness of U.S. interests across the globe, it is important to re-examine the purposes, the intellectual coherence, and the practical execution of American strategy.

Emily Hill

What is a pivotal state? Two years ago, we began to identify states in the developing world that were swing states, precariously balanced between hegemony and stagnation. These states were rushing to develop while attempting to stave off political and social chaos. In our view, pivotal states meet the following criteria:

First, pivotal states are modernizing states that face third world challenges. They are not basket cases like Somalia, Burundi, or Zaire. Prime examples of pivotal states include Mexico and Turkey. Stand in one part of Istanbul, and you can imagine yourself in modern Europe but walk three blocks, and you know that you are in the developing world.

Second, a pivotal state is balanced precariously between success and failure. The future could either bring continued political, social, and economic reform, or harbor chaos and regression.

Third, these pivotal states potentially have a significant influence on their regions, perhaps as engines of economic growth, or as models of political liberalization.

Most importantly, these states are geo-strategically placed. They are large and populous, with a growing middle class, and they are located in positions of importance to U.S. security, perhaps near some of the world's hot-spots or along major maritime routes.

The point is not to split hairs about which state is pivotal but rather to use this model as a means to assess the strategic importance of different states in the developing world. Right now, the following states have been designated as pivotal: Egypt, Turkey, Brazil, Mexico, South Africa, Indonesia, Algeria, India, and Pakistan.

What does the existence of these pivotal states mean for U.S. foreign policy? The pivotal states project provides a rigorous means to prevent instability and to promote prosperity in the developing world. Instead of directing scarce national resources haphazardly to humanitarian projects, the pivotal states strategy directs funds to the establishment of relations with particular developing countries.

After the end of the Cold War, many legislators thought that less money was needed for foreign policy. As Sir Halford McKinder once noted, democracies fail to think strategically in times of peace. The repercussions of rapid change in the developing world will affect American national interests. A pivotal states strategy will encourage policymakers to confront these challenges directly, before they threaten American national security.

Robert Chase

The pivotal states idea is a device to get people talking about American priorities at the end of the Cold War. Many people have thanked us for getting the discussion started about where U.S. interests lie, but there has also been some criticism. One group of people called it overly simplistic to choose nine states out of 130 as pivotal. Some people asked, "What about America's responsibility to the poorest countries of the world?" Another group said that for diplomatic reasons, it did not make sense to list openly the countries that the United States prioritized. A fourth group said that development assistance could not help foster security.

That there are so many contradictory ideas about the pivotal states model suggests a lack of coherency among international experts in U.S. foreign policy. The pivotal states project has invested effort in bringing people together to exchange ideas and to share their expertise.

The original article on pivotal states presented the new strategy as a pragmatic re-focusing of American aid. By focusing AID's scarce and diminishing re-

sources on a limited number of countries, U.S. resources would make more of an impact. However, over the last year, we have learned from country experts that even if USAID focused all existing resources on only nine countries, these countries would see few tangible results. They are not looking for development assistance but rather for American investment, technology, and trade.

If the United States handles primary responsibilities for a list of nine states, perhaps other multilateral organizations could be given primary responsibility for dealing with other countries. Another finding is that it is important to address issues that cut across national borders using a state-focused framework. The National Security Council would be the most appropriate body to affect this sort of policy review.

The pivotal states approach offers the United States an opportunity to reassess its policies, ensuring coherence and coordination.

CASE STUDY ON INDONESIA

John Bresnan

The American public knows little about Indonesia, a country with the fourth largest population in the world and the largest economy in Southeast Asia. The population of Indonesia is very diverse. Eighty-seven percent of the people are Muslim; 300 separate ethnic groups exist, with no ethnic majority; and 250 different languages are spoken. The location of Indonesia is strategic—with three thousand miles of water and islands stretching across all the sea lanes between the Pacific and the Indian oceans.

Indonesia is regionally influential, a founding member of the Association of Southeast Asian Nations, and the leading figure in the nation's diplomatic affairs. The country played a critical role in the creation of APEC and in the creation of the first security organization in the history of the Pacific nations.

Indonesia is also globally significant, with the country gaining leadership among Third World countries, and currently representing a major new interest for the IMF and World Bank.

The government of Indonesia has been authoritarian, successful in increasing the size of the economy, and effective in reducing population growth over the last twenty years, with growth down to 1.8 percent a year. The economy has grown by an average of 6 percent per capita in real terms over the last twenty-five years.

As a result of the extraordinary economic growth, rapid social change is occurring. The government is making an effort to stress education and to address poverty issues. So many people have benefited that expectations are extremely high. During the run-up to the recent election, riots broke out. The country is in the early stages of a political transition, in a precarious state between rapid modernization and social stress.

CASE STUDY ON INDIA

Sumit Ganguly

Why does India matter? It matters because one cannot afford to ignore a fifth of humanity. India is one of the ten leading emerging markets, and despite some setbacks, India is clearly on the path towards economic liberalization. In India, democratic institutions have survived. Since 1991, India has been growing at approximately 5 percent per capita, and the projection is that it will grow at 7 percent. In ten years, income will essentially double.

What about India's longevity? There are a number of causes for concern, including ethnic-religious conflict and overpopulation. India adds approximately eleven million people, the entire population of Australia, to its population every year, with important consequences in terms of health, housing, and sanitation. However, India is not on the verge of crisis nor in immediate danger of collapse. In contrast, India has achieved extraordinary integration; the 1997 elections have improved the government's stability; and institutional renewal in India has taken place. India's economy will continue to grow, particularly as institutions acquire a great deal of robustness.

On the part of the United States, India has been the subject of considerable neglect since the 1960s. Now, there are several ways that the United States can show a renewed interest in India. The president should be swifter in terms of appointing an ambassador. The NSC could use a full-time staff for South Asia, and a position similar to assistant secretary in the State Department should be created. The Indian region would also be enhanced by a presidential, or at least a vice-presidential, visit. No president has visited India since President Carter, and now would be a good time to demonstrate American interest in India. Regional arms control, particularly within the Indian military and the U.S. military, would encourage nonproliferation. Continued support of economic liberalization in India, perhaps by increasing access to American markets, would also help stabilize the Indian economy.

CASE STUDY ON MEXICO

Peter Smith

The pivotal influence of Mexico is, in some ways, overshadowed by the presence, power, and influence of the United States. However, Mexico is critical to the United States because of bilateral links.

The future of Mexico is difficult to predict. Right now, Mexico has a "checkerboard democracy," with free and fair elections and democratic rule in some sectors, and authoritarianism in other sectors. In the last fifteen years, there has been an escalation of violence, a string of high-profile political assassinations, and rebellions in Chiapas and Guerrero. The traditional political apparatus is in an advanced state of institutional

disintegration.

One prediction for the future is that there will be a continued process of democratization in Mexico. Mexico's political situation is undergoing considerable change, and it may even be possible for an opposition candidate to win the presidential election in the year 2000 or the year 2006. For democratization to happen, free and fair elections must occur.

A less fortunate possibility for Mexico's future may be a throw-back to authoritarianism, with an alliance between reactionary elements within the PRI (the so-called dinosaurs), segments of the military, and law-enforcement agencies. In fact the populist dinosaurs are not all old, retrograde, corrupt, right-wingers as their opponents claim; only some of them fit this description. If we start seeing social unrest in Mexico City and other metropolitan centers, we might conceive an authoritarian response.

Alternatively, we may see an equilibrium or uneasy balance between democracy and authoritarianism in Mexico over the next ten to fifteen years. This would mean perpetuation of the checkerboard pattern that is now in place. Though Mexico has not collapsed—Mexico is no Yugoslavia, Rwanda, or Zaire—there is considerable uncertainty about its future.

According to the World Bank, the Mexican population is likely to be 108 million by the year 2000, 135 million by the year 2025, and 165 million by the middle of the decade. This growth may cause unemployment and social agitation, leaving the state vulnerable to authoritarian repression.

There is no sign in the near future that Mexico is going to employ its next generation, so an increased number of migrants may enter the United States. We are trying to build triple fences in San Diego, double the budget for border patrol, and carry out operations like "Hold the Line." However, these policies push the migratory stream from one place to another but do little to ameliorate it.

The United States will also continue to deal with drug trafficking. Mexico was thought to be the transit point for about 30 percent of cocaine imported into the United States in the late 1980s, and 70 to 80 percent in the mid-1990s. Newly strengthened cartels represent a source of major political corruption and have caused an escalation of violence. These problems will continue to complicate our relationship with Mexico.

U.S. policy is, in some ways, institutionally and bureaucratically "balkanized" between trade, state, DEA, and INS, with each agency having its own policy toward Mexico. We need a more coherent and unified policy, with a reconciliation of our policies on immigration and trade. Right now, we have free flows of capital and products, but in contrast, no free flows of labor. What can we do to improve our policies? Guest worker programs could be explored, and collaboration along the border could be increased. As far as drug

control policy is concerned, we could turn our attention away from supply control to demand reduction.

President Clinton met briefly with opposition leaders, in the middle of a campaign swing, two months before an important mid-term election in Mexico. The PRI saw this as a great opportunity to bolster its own political capital. Though we applaud Mexico's transition toward democracy, we have to be careful about our alignment with the PRI and the ruling party.

GENERAL DISCUSSION

Comment: Did you make any attempt to quantify the different variables to lead to your pivotal states' conclusions?

Chase: Many of the definitions that make states pivotal are very difficult to quantify. We have, however, been putting together matrices to evaluate the different dimensions that Emily put together. Quantifying the different variables is certainly a valuable idea, and we are open to suggestions.

Comment: Do you agree that leadership in having a free market is one of the most important things that the United States can provide?

Kennedy: I clearly support economic integration, and open markets, but as our individual state experts would caution, the transition will not come easily. For example, as Egypt opens, bureaucratic and trade union backlash will result from the high levels of unemployment that accompany societal restructuring. By focusing upon the nine pivotal states, we could head towards a more specific state-centered policy, which we could use in conjunction with the general message of opening the world economy.

Comment: At the heart of the rationale for pivotal states is bringing the new security issues onto the agenda, with non-military threats leading to military consequences. How can these issues lead to military consequences in any of the pivotal states?

Kennedy: Approaching an environmentally driven social threshold could cause tensions and instability. For example, Egypt's population is growing by 600,000 per year; the population is increasing from fifty-five to eighty-five million; and the people all have to fit in a five or six mile wide distance along each side of the Nile. Significant water depletion, and large-scale youth unemployment feed the Muslim Brotherhood. As environmental and population pressures build, despite some signs of modern reforms, the regime worries about its social fabric unraveling.

Comment: If you are talking about U.S. aid being a less

significant factor, when pivotal states need more investment, technology and trade, rather than funding, what exactly does a pivotal states strategy accomplish?

Kennedy: The pivotal states strategy asserts that aid needs to be viewed in a global sense. The issues of population, migration across borders, and environmental pollution across borders should be dealt with on an international scale, not just with U.S. funds.

Comment: On what basis was Ukraine excluded as a pivotal state, since it seems to meet the profile?

Chase: My own research is on the Czech Republic and Slovakia, and I originally argued to include Ukraine. However, one of the elements of pivotalness is the degree to which events in that country have broad-reaching global effects. We argue that even if there was horrendous political instability in the Ukraine, the surrounding nations could act as buffers from the negative impacts. Russia overshadows Ukraine as a pivotal state in Eastern Europe.

Kennedy: I cannot separate the Ukraine problem from the Russia problem or the future of NATO expansion, so I see the Ukraine as important to our foreign policy.

Comment: We are working with NGOs in the Former Soviet Union, and we keep hearing that the NGOs in other parts of the world are making a huge difference. I am curious to know if there are some general statements that you can make about the development of the NGO sector in the pivotal states?

Comment: The NGOs can do analytical work and provide missing information. By institutionalizing the NGOs, we can gain a unique scientific perspective and analysis, and input on policies. The NGO's human rights sector is building up pressure in developing states, including India, Pakistan, and Indonesia.

Comment: Dr. Hill said that it is hard to think strategically in times of peace. A corollary is that it is very hard to talk about environmental and population problems when the global market is at its most propitious point of the century. How do you emphasize these environmental issues in the midst of a global market boom?

Comment: It is difficult to convince the American public that environmental problems pose security threats, especially since the economy is booming. Most environmental problems are not instantly noticeable. Pollution does not immediately cause harm. But when a threshold is reached, suddenly major effects become noticeable. For example, China has devastating local air pollution problems; in the last year, they have an-

nounced that 26 percent of deaths in China are respiratory disease related. It takes a little time for that data to penetrate, but senior Chinese policy officials know that staggering public health problems require attention. China's controlled media keeps environmental problems from making an impression on the public. In democracies, it is easier to ignite attention towards resolving environmental problems.

Comment: In the Philippines it was suggested that environmental drag was going to affect GDP, but instead markets have opened up more. Is this a case of decoupling?

Comment: With respect to environmental drag, a huge portion of the environmental effects of economic growth are exported. From the rational Chinese point of view, since they do not pay the full price for their pollution, they have less incentive to cut down. They do have terrible problems with respiratory disease, but they drag the United States into paying for some of the other pollution costs. We need to resolve this externality problem. If we do not signal to these countries, if we keep paying for their economic growth, there is no real impetus for action on their part.

Comment: What is the state of political security in India, and how does that relate to India's status as a pivotal state?

Comment: India is a patch-work quilt, with varying state capacity. Certain portions of that quilt have become rattled with disregard for the law and corruption in the government. The prime minister is on the verge of going to jail. There are also new security threats in Bangladesh. The changing demographic balance in Bangladesh contributes to ethno-religious tensions. Large numbers of people are infiltrating into India across the Chinese border. Indian politicians are colluding, so they can issue these people ration cards to vote. If I were an Indian decision maker, I would invest heavily in Bangladesh's economic development. That way people there would have opportunities to turn to at home and would not seek haven elsewhere.

Comment: What would be the most useful way to intervene in Mexico?

Comment: Working to stop internal institutional disintegration in Mexico and the cocaine trade is key. In the old days, marijuana and heroin was transported by local cartels and dealers, but today the cocaine operation has dramatically transformed the economic and paramilitary situation. The first thing we need to do is to change our drug policy that does not, cannot, and will not work. We need to focus on demand instead of supply.

Tensions in countries like Mexico arise from a rapidly rising population, food shortages, desertification, water depletion, and pollution. Unmanaged urbanization creates public health concerns for populations, especially along the U.S. border. Pollution and toxic exposure, and other public health problems arise from poor management of the development process.

Environmental factors are rarely direct causes of failure, but they do create social tensions, drive up infant mortality, and cause public health threats. Countries like Canada, Mexico, and the Caribbean have the potential to spill their environmental problems on the United States. Air pollution and waste can filter across the border into the United States. Emissions, climate change, ozone layer, fisheries depletion, and biodiversity issues cause global problems. These problems present the classic collective-action problem.

Comment: What are the most environmentally significant countries?

Comment: The two most environmentally significant countries are China and Russia. Coal burning from China pumps emissions into the sky at unprecedented rates. By 2030, China alone will contribute 30 percent of the emissions, doubling the greenhouse gases in the atmosphere. Russia, as a source of fuel for a great many other countries, also emits a large share of greenhouse gases. Brazil plays a huge role in environmental problems as a sequester of carbon dioxide. Brazilian forests are a major place for reducing carbon, and if they are cut, or worse yet if they are burned, there is the reverse effect. Rather than absorbing carbon dioxide, we are seeing additional emissions. Brazil also has huge biodiversity, an important resource.

The pivotal states strategy helps determine how to address environmental problems by asking specific questions. Do environmental issues affect state-regional stability? Is there potential for environmental spill-over in the United States? Is this country an important player in global-environmental issues? Many countries fit this criteria, but Mexico, Brazil, China, and Indonesia are all superpowers in the environmental arena. The environmental dimension is key both in shaping environmental policy and in forming a pivotal states strategy.

Comment: If you added states to your list of nine that were environmentally pivotal, which states would you add?

Comment: I would add states with vast population and economic growth which cause environmental harm, such as Thailand, Malaysia, and Nigeria. However, in the environmental debate, the key set of countries on any particular issue might vary somewhat in this core set. If biodiversity is a high priority, Kenya may be an

additional state. If saving whales ranks a priority, Norway should be included. The pivotal states model can be refined, depending on the particular issue.

Comment: My fear is that leaving China and Russia off the list does not acknowledge the need for attention to global issues. For example, on climate change, we have heard from some senior Chinese officials who basically say that the United States should treat China as a developing country when it comes to international environmental issues. China would like to get more technology, and more assistance to meet environmental challenges. My fear is that by leaving them off as pivotal states, even though Russia and China will still get a lot of attention with traditional issues, they will not get much needed attention as developing countries.

Comment: I do not think that we should feel threatened by Russia and China in the midst of your global environment accords. We started off with a list of nine states essentially to provoke debate and to identify our priorities.

Comment: How does the pivotal states strategy propose to address the issue of human rights?

Comment: The pivotal states strategy enables the focus required for the promotion and application of human rights standards. An effective policy has to promote and support a human rights culture. Human rights is about protecting the physical, intellectual, and spiritual dynamic of the human condition. As the *Journal of Human Rights* noted, the application of small

amounts of targeted assistance to elect core value institutions, including NGOs, could promote human rights. Such institutions often lay the grass roots for development in human rights groups, such as citizen's groups, women's organizations, educational groups, and institutions.

Much of the human rights program's success is owed to the promotion of standards, in the form of policies, and mechanisms. Unfortunately, promotion has been more successful in Geneva, New York, and London than in Islamabad, Jakarta, and Algiers.

However, the geometric rate by which global telecommunications are accelerating has become critical to the promotion of human rights. Rapid transnational signaling can accelerate the response of the United Nations Human Rights program to individual and community needs.

How can human rights laws be applied in pivotal states? If the United States human rights policies concentrate on select states, application of the law might be more achievable.

I would also use human rights programming in pivotal states to promote neighboring state and regional initiatives. Pivotal states such as Pakistan, for example, could serve as platforms for the promotion of human rights in neighboring states, such as Afghanistan. Next, I would initiate concentrated human rights monitored trading in pivotal states, in close conjunction with citizen and grass roots organizations. Finally, government sponsored national human rights institutions, such as the increasingly effective Human Rights Commission of India, should be supportive and new human rights organizations should be promoted.

30 September 1997

Bridging the Gap between the EU and the U.S.: Attitudes, Analyses, and Strategies

MICHAEL GRUBB, Energy and Environmental Program, The Royal Institute of International Affairs

Last year, in Geneva, the United States called for the Kyoto negotiations to establish leading binding targets for the reduction of CO₂ emissions. There are still considerable skeptics who question the seriousness and adequacy of these targets, but after years of debate, governments have largely gone beyond the “whether” to the “how.”

The Kyoto Agreement on restraining CO₂ emissions can be more efficient and environmentally effective through the use of intergovernmental emissions trading. After an international agreement enters into force, one government may reach agreement with another participating government to exchange part of its allowable emissions, so that one may emit more and the other correspondingly less. The terms upon which they agree to the exchange would be a matter between them—the terms might involve monetary transfer, a non-monetary political trade-off, or something in between such as debt cancellation.

Intergovernmental emissions trading increases economic and environmental efficiency. A country which has higher abatement costs for reducing emissions can trade with a country that has lower abatement costs. Therefore, the cost of achieving a collective reduction in emissions is lowered. Intergovernmental emissions trading also allows for more flexibility in negotiating binding commitments. Countries such as Norway will not be as risk-averse towards an agreement, if the security exists that when target goals cannot be met, trading to gain more emissions can ease economic strains. Clearly, introducing the option of trading increases the willingness of countries to enter into an agreement. Countries can then ease the political problem of allocation by negotiating among themselves to change individual emissions levels.

A significant part of my own efforts over the past year has been to persuade European and Japanese governments that emissions trading is a good thing. Key European policymakers came to accept that intergovernmental emissions trading is a practical proposition, and that it could have advantages. But one real and potent concern remained: could emissions trading become a means by which the world's biggest and richest polluter, the United States, could escape from having to take any significant domestic action? Specifically, if the targets established at Kyoto are relatively weak, could the United States buy in, at little or no cost, to sufficient additional quotas to avoid having to take any significant action at all?

Against this background, the European Council of Ministers met in June and crafted a simple but effective compromise that called on countries to clarify their specific commitments. The European Union stated that it is prepared to accept the logic of emissions trading, but only if clear benefits result, with greater efficiency enabling a stronger overall outcome.

The “international trade in emission allowances” (ITEA) model is an easy-to-use and transparent tool that predicts the outcome of intergovernmental trading and explores key themes related to defining commitments in the Kyoto negotiations. The costs to the European Union, the United States, and Japan were predicted and compared under the following conditions: without trading of CO₂ emissions, with trading of only CO₂ emissions, without trading of all greenhouse gases, and with full intergovernmental trading of all greenhouse gases. The data used came mainly from governmental submissions made available by the International Energy Agency. The results show that the costs to the major OECD countries associated with reducing domestic CO₂ emissions by 5 percent from 1990 levels are the same as those arising from a flat-rate reduction of 13.9 percent across all industrialized countries, if that 13.9 percent reduction is implemented with the ‘full flexibility’ of including all greenhouse gas emissions with full intergovernmental trading. In other words, when costs are kept constant, full intergovernmental trading of all greenhouse gases results in a net benefit of about 9 percent in reductions.

Technological developments can further reduce the cost of emissions reduction and help provide more efficient electricity. For example, the United Kingdom owes its ability to reduce carbon dioxide output to advances in the electricity sector. Around the world, improved technology has made possible the use of alternative energy sources. The use of wind energy was negligible in 1990, but capacity in Europe has grown at roughly 25 percent annually. Wind energy capacity in Europe is now projected to exceed 6000 MW by the year 2000 with rapid increase thereafter.

The most valuable aspect of Kyoto is the creation of a structure which offers a first and simple step on the road to defining appropriate commitments. Developing countries should be involved, but the responsibility for reducing emissions should reside with the countries that cause the bulk of the problem, release the most emissions, and have the best technology. When those countries demonstrate seriousness of intent—when they bring their own emissions down to

historic levels—then a precedent for developing countries to follow will be set. Therefore, the reduction in Kyoto is a pre-condition for negotiating with developing countries. An important goal is to remove the hesitation of developing countries to being drawn into commitments and to make it attractive to those countries to reduce emissions. Emissions trading offers a way forward.

Wilson Center Fellows and Scholars

The Wilson Center has a long history of fellows and guest scholars coming to research and write on environment, population and security issues. Here is a selection of recent and upcoming fellows and the Wilson Center programs sponsoring their stays. For more information on all Wilson Center programs and projects, visit our web site at <http://wwics.si.edu>.

ASIA PROGRAM:

Dai Qing - Woodrow Wilson Center Fellow

Freelance Writer and Journalist, Beijing, China
"Zhang Dongsun: The Fate of China's Leading Independent Intellectual"
September 1998-May 1999

DIVISION OF U.S. STUDIES

Robert Fishman - Public Policy Scholar

Professor of History, Rutgers University
"Metropolitics: What Washington Needs to Know About the New Regional Politics of Cities and Suburbs:
September 1998-June 1999

LATIN AMERICAN PROGRAM:

Raul Benitez-Manaut - Guest Scholar

Researcher of the Centro de Investigaciones Interdisciplinarias en Ciencias y Humanidades UNAM, Mexico
"Mexican National Security at the End of the Century: Challenges and Perspectives"

Charles Briggs - Woodrow Wilson Center Fellow

Professor of Ethnic Studies, University of California, San Diego
"Infectious Diseases and Social Inequality in Latin America"
September 1997-June 1998

KENNAN INSTITUTE FOR ADVANCED RUSSIAN STUDIES:

Theresa Sabonis-Chafe - Short-Term Scholar

Ph.D. candidate, Department of Political Science, Emory University
"Power Politics: National Energy Strategies of the Nuclear Successor States"
June-July, 1997

Viacheslav Glazychev - Guest Scholar

President of the Academy of Urban Environment and Professor, Moscow Architectural Institute
"Cultural Foundations for the Urban Environmental Development"
July-August 1997

Tatyana N. Garmaeva - Guest Scholar

Russian Academy of Sciences, Siberian Division, The Baikal Institute of Nature Management
"Problems of Sustainable Development and the Role of International Cooperation in the Lake Baikal Region"
January-April 1998

Frances L. Bernstein - Research Scholar

Postdoctoral Fellow, Department of History of Science, Medicine and Technology, Johns Hopkins University
"Gender and the Politics of Public Health in the Soviet Union"
September 1998-February 1999

The Challenges of Freshwater Resources into the Next Millennium

As the world's population and global economy grow, demands on the world's freshwater resources are expanding rapidly. Traditional water institutions, laws, regulations, and treaties are straining to meet the new demographic and economic realities of the twenty-first century. To examine this critical issue, the Environmental Change and Security Project convened a conference entitled *Conflict or Cooperation: The Challenges of Freshwater Resources into the Next Millennium*. Held at the Woodrow Wilson Center on 18-19 November 1997, the conference brought together international scholars and hydrological experts to further understanding of freshwater and water resources management. Chaired by Jerome delli Priscolli, Director of the Army Corps of Engineers' Water Resources Institute and editor of the journal *Water Policy*, the conference examined the diplomatic, political, social, and economic importance of water, not only as a catalyst for conflict, but as a potential tool for preventive diplomacy.

Participants focused on keys to unlocking shared interests in river basin negotiations. Many thought the answer lies in emphasizing benefits rather than rights. Instead of each country arguing for its 'right' to specific portions of a river—regardless of how unsatisfactory this might be to the other nations involved—nations should look at the basin as a whole and build sustainability into agreements. However, debate continued over whether it is possible to determine water needs for all people. Many argued that putting benefits and sustainability first were useful goals in water negotiations, but that there were other important dynamics to consider, such as the symbolic role of water.

Presenters discussed the Middle East as one of the best examples to illustrate the intersection of "high politics" and water concerns. Various ongoing Middle East negotiations include both bilateral and multilateral agreements on freshwater. Yet challenges remain. In informal talks, Israel offered to provide 500 million cubic meters of water to Gaza from the carrier system that draws from the entire basin, but the Gazans resisted and demanded *their* water. Illustrating the difficulty in water negotiations, this demand referred not to quantity or capacity, but instead to symbolic recognition. A number of presentations traced how freshwater resources have acted as a catalyst for peace and cooperation rather than for war.

The conference convened a diverse group of scholars and practitioners. In particular, the international water expert community with technical expertise came together with a broad selection of participants from within the U.S. government and the private sector. As integrated water management calls for a new dialogue between policymakers, diplomats, financiers, lawyers, scientists, and engineers, this two-day meeting was a step toward building greater understanding across the various disciplines.

AGENDA

Framing the Debate: Scarcity versus Distribution
SANDRA POSTEL, Director, Global Water Policy Project

*Framing the Debate:
Allocating Benefits versus Allocating Water*
EVAN VLACHOS, Associate Director, International School
for Water Resources, Colorado State University

Water and Conflict Resolution
AARON WOLF, Assistant Professor,
Department of Geography, University of Alabama

Water and Civilization
JEROME DELLI PRISCOLI, Senior Policy Advisor, Institute for
Water Resources, U.S. Army Corps of Engineers

*Extreme Hydrological Events and Social Change:
7,000 Years in the Nile Valley*
FEKRI HASSAN, Professor, Department of Egyptology,
University of London

*Capacity Building for Integrated Water
Resources Management*
FRANK HARTVELT, Senior Water Policy Advisor,
United Nations Development Programme

Changing International Legal Regimes for Water
JOSEPH DELLAPENNA, Professor, School of Law,
Villanova University

*The Indian-Bangladeshi Riparian Conflict
and the Role of Incentives*
SUMIT GANGULY, Professor, Department of Political
Science, Hunter College

*History of Water Plans, Negotiations, and Agreements
in the Middle East*
MIRIAM LOWI, Assistant Professor, Department of
Political Science, College of New Jersey

Water Scarcity and Regional Security in the Middle East
STEVE LONERGAN, Director, Center for Sustainable
Regional Development, University of Victoria

*Water and the Role of Incentives in the
Middle East Peace Process*
AMBASSADOR CLOVIS MAKSOUR, Director, Center for the
Study of the Global South, American University

*The Future of Technological Responses to
Freshwater Management*
ANDRAS SZÖLLÖSY-NAGY, Director,
International Hydrological Program, UNESCO

The Nile Forecast and Management System
ARIS GEORGAKAKOS, Professor, Georgia Water Resources
Institute, Georgia Institute of Technology

*Real Time Interactive Simulation in Multiparty
Stakeholder Water Negotiations*
WILLIAM WERICK, Policy Analyst,
U.S. Army Corps of Engineers

20 November 1997

Damming Troubled Waters: Conflict over the Danube

RONNIE D. LIPSCHUTZ, Associate Professor of Politics and Director of the Stevenson Program on Global Security, University of California, Santa Cruz

Dr. Ronnie Lipschutz, a prominent contributor to the ongoing debate over environment and security linkages, presented findings from his case study on conflict and the Danube River. With research originally prepared for the Environmental Security Project of Columbia University, Lipschutz provided a detailed historical examination of the conflicts that have arisen along the Danube. He paid particular attention to the modern confrontation between the states of Slovakia and Hungary over their shared Gabčíkovo-Nagymaros Barrage System (GNBS). In this case, the Danube River provided an important example of a “dog that didn’t bark,” a case where shared water concerns led to strained tensions but did not result in violent conflict. Lipschutz highlighted the critical roles played by institutions in mitigating a violent outcome.

Beginning in Germany and ending 2,888 km later in the Black Sea delta, the Danube River Basin includes 13 countries in Europe and is shared by a mix of religious and ethnic groups. Historically, the delta was a flood plane that people struggled to manage. Over the last two hundred years, the river has turned from a “natural habitat” into a highly industrialized area. Paradoxically it is now the fact that flood control is so good that there is a water shortage for some parties along the river.

In the 1920s, the Soviet Union proposed to build a barrage system across the Danube to make the region navigable for military purposes. By the 1950s and 1960s, joint planning among the communist countries of the Eastern Bloc proposed the Gabčíkovo-Nagymaros Barrage System (GNBS) on the middle part of the Danube River running through Czechoslovakia and Hungary. Supporters argued that the new source of electricity that would come with the dams and power plants would substitute for air-polluting soft brown coal, help meet the energy needs of both countries, provide flood control and agricultural irrigation, and improve the river’s navigability. Although there was skepticism on environmental, ethnic, and other grounds, the governments and water management sectors of both Hungary and Czechoslovakia were enthusiastically in favor of the project. Hungary and Czechoslovakia finalized plans for the river in a 1977 bilateral treaty.

In the 1980s with work on the barrage system underway, opponents of the GNBS formed the group Danube Circle in Hungary. In 1988, 40,000 people turned out to protest before the Parliament Building in Budapest. Not long after, the organization was able to give the government 140,000 signatures from people against the project. Hungarian officials did not strongly curb these political actions as they thought it less threatening for their citizens to protest water rights than human rights. The officials miscalculated according to Lipschutz. What first began as an environmental group turned into a broader force of opposition to the Hungarian regime. Although external funding had been obtained and construction begun, growing political opposition in Hungary to the dam coalesced into a mass movement that was eventually able to raise the matter to the highest political levels and bring the project to a halt on the Hungarian side.

However, in Slovakia, the plans for damming the river were not similarly sidetracked: a new alternative plan for the series of dams, known as Variant C, came into favor. Without building on Hungarian territory, the Slovaks managed to alter drastically the Danube’s water flow by closing off side channels in Slovakia. The project aspired both to create scenic views and to harness the Danube’s hydropower.

Hungary tried to stop Variant C while Slovakia kept moving forward with dam development. It is at this point that a violent confrontation was conceivable with the environmental elements fanning ethnic tensions. Yet instead it was the reliance on institutional alternatives for conflict resolution that led Lipschutz to describe the case as evidence for a more skeptical view of environmental contributions to violent conflict.

In 1992, Hungary took Slovakia to the International Court of Justice (ICJ); Slovakia then filed a counter-suit. Hungary claimed the construction and operation of Variant C blatantly violated the 1977 treaty, while Slovakia claimed that Hungary had no right to break the 1977 treaty. The 1997 ICJ verdict was what Lipschutz called a “political monster.” The ICJ found that Variant C could be built but not operated. The Court also ruled that Hungary had no right to break the 1977 treaty and would have to compensate Slovakia. Finally, the countries were obliged to negotiate a compromise agreement for future arrangements.

Variant C remains a symbol of sovereignty and strength for Slovakia. Slovakian Prime Minister Meciar can shore up his own power base by using the issue to play what Lipschutz calls the “Hungarian card” in eastern Slovakia where there is a sizable Hungarian minority. Politically, Hungary has more incentive to find a solution: the carrot of European Union membership could be a reward. Since EU membership is further off for Slovakia, Lipschutz believes that the final outcome will favor Variant C.

In terms of lessons to be taken from the Danube and the Gabcikovo-Nagymaros dispute, the emphasis according to Lipschutz should rest on recognizing the importance of domestic and international institutions in conflict resolution. In the realm of environment and conflict, institutions matter and future research must better integrate these variables intervening between

environmental degradation or depletion and violent conflict. In the case of the conflict between Hungary and Slovakia, recourse to the European Commission and the International Court of Justice in The Hague provided a social structure that allowed for the exploration of alternative social arrangements. A density of linked and overlapping institutions dampened tendencies toward an anarchic and violent relationship between contending parties.

Editor's Note: For more on Ronnie Lipschutz's arguments on environment, conflict and security, see his publications cited in sections A, B, and D of the Bibliographic Guide to the Literature. For more on Columbia University's Environmental Security Project, see the entry in the Updates Section.

December 11, 1997

U.S. Population Activities: Ongoing Plans and Future Directions

JULIA TAFT, Assistant Secretary of State, Bureau of Population, Migration and Refugees, Department of State
DUFF GILLESPIE, Deputy Assistant Administrator, Center for Population, Health and Nutrition, USAID
PATRICIA ROWE, Chief, Population Studies Branch, International Programs Center, Census Bureau

Julia Taft

The State Department has established that international population policy is critical to sustainable development strategies. International family planning policy affects the ability of people around the world to sustain livelihoods. It also has an impact on issues surrounding women's health, children's survival, and healthy families. I think that there is a great deal of misunderstanding or conscious deception in what the U.S. policy is toward population.

When we promoted our pro-choice program and tried to provide worldwide family planning assistance, some people characterized our policy as pro-abortion. Actually, pro-choice is pro-life. Our emphasis is on keeping the already-born children alive, opening up options, and educating women.

When children are too closely spaced, their survival rate is very low. How do we provide families with an environment in which their children can survive? The U.S. funds family planning programs. We give money to Georgetown University for consultations, to try to help families determine the best method of birth spacing for them. We conduct programs in micro-credit so that women have options of working rather than just staying at home and producing more children. We promote female education because women who are educated gain more respect as well as develop the ability to take care of the children they already have.

The legislative challenge that we face is the global gag rule. We all know and comply with the restriction that all recipients of federal money may not use these funds to pay for abortions. There was, in fact, a recommendation that organizations could not—even with their own money—fund discussion about abortions or the promotion of policies to change rules, in their own or other countries. The Istook Amendment attempted to tell recipients of federal money, the NGOs, that they could not use any portion of their own money to try to influence national legislatures. That has been discarded; I hope permanently. The debate around the amendment centered on free speech. Does the federal government have any authority to tell organizations or individuals what they can do with their own money?

Family planning is particularly relevant to the national security community. Look at some of the countries that have incredibly high unsustainable population growth—Nigeria, Saudi Arabia, Liberia, and in particular, Rwanda. These countries do not have room for all their people. They cannot educate their citizens nor handle migrations of people. They devastate forests to create land and grow food. Major tensions exist between ethnic groups, as factions attempt to gain economic and political leverage. When governments cannot service the needs of their societies, the result is upheaval.

There are 125 million women who have already expressed a need, a willingness, and an urgency for family planning, but who are unable to obtain it. Because of this, many will have abortions, and many of them will die. We need to consider these women as we put forward a new population policy.

Duff Gillespie

USAID is the primary executor of the U.S. government's population program, which was begun in 1965. The bulk of USAID funds go to family planning activities either directly, such as for the provision of contraceptives, or indirectly, such as to research related to the assessment of family planning efforts. The budget in FY 1998 is \$385 million. We operate in sixty countries, but there are fifteen countries designated as priority countries. These include the largest countries in which we have bilateral programs: India, Bangladesh, Indonesia, Ethiopia, and Peru.

We classify eight additional countries as "special concern countries." These are countries in which we are active either because of a crisis situation, such as Haiti, or for historical reasons, such as Mexico. At the present time, Haiti receives more population funds per capita than any other country in the world. This is because of the

special crisis situation that exists there. However, that level of support is probably not likely to continue. For most of these eight countries—special concern countries—we are either in the process of withdrawing or reducing aid.

The rationale for the program, as defined by Congress and the administration, is to make population dynamics consistent with sustainable development. We do not set a particular demographic target, but we do see population as an important dynamic for our social and economic development. In most cases, the actual population plan of action that occurs in a particular country is that which is defined by the host country's government.

USAID has focused on building upon its family planning and research programs in order to have a greater impact in the areas of family planning and reproductive health. For example, a major new initiative under the Clinton administration is post-abortion care, which I might add is fairly noncontroversial, even on the Hill. This post-abortion care involves taking life-saving steps for women who have had incomplete abortions, usually as a result of illegal abortions.

We are much more active in programs focused on sexually transmitted diseases, such as HIV / AIDS programs. We are also involved with internal and reproductive health programs, and a population health nutrition program, with spending on health-nutrition totaling about \$550 million per year.

What has been the result of our work? USAID is by far the largest donor in the area of population and, with the exception of China, has played a pretty important part in all major family planning programs in the developing world. There has been a major shift in the demographic situation of the world. In the 1960s the doubling time for the developing world was thirty-four years, and the average family size was over six. Now, the doubling time is forty-six years, and average family size is under four.

Groups like ours try to show that in order to improve health and empower women, societies must make population control and reproductive health a priority. I have serious doubts, however whether these findings will provide enough incentive for host country governments to start making major investments. The challenge is to try to show individuals who control policies why this is something that should be considered as important for the well-being of not just their citizens but also their economies.

Patricia Rowe

The International Programs Center is part of the U.S. Bureau of the Census. The U.S. Bureau of the Census does not do policy; it essentially produces data. The Center has two components, technical assistance and research. For more than forty years, the bureau has been helping countries by providing technical assis-

tance in gathering information. This assistance in more than 100 countries has taken the form of teaching statistical office staff how to plan, design, conduct, analyze, and disseminate the data.

The Center provides to their sponsors information that they could use to evaluate the potential for security or environmental problems. An example of the latter relates to the potential catastrophes due to environmental situations—such as erupting volcanoes—in a country. The Center provided a sponsor with the number of people living near the volcano so they could assess the potential for a catastrophe. The Center has developed two databases, the International Database and the HIV / AIDS Surveillance Database. The former contains demographic and socioeconomic data and the latter contains epidemiological information on HIV / AIDS seroprevalence for developing countries.

We produce population projections for all countries of the world, as well as for selected subnational areas, except the United States. Policymakers use these projections to make informed decisions. On the research side the Center uses data from censuses, surveys, and administrative statistics to evaluate the economic and social development of selected countries. We also produce reports on countries going through the transition to market economies. It is essential that population projections be revised as new data are available. Ten years ago we predicted that the world population in 2050 would be more than ten billion. Our recent projections expect the 2050 world population to be closer to nine billion.

GENERAL DISCUSSION

Comment: The change in demographics, especially in certain developing countries, may cause a very volatile situation. Although we can help the developing regions of the world adapt to population growth, we probably can't stop the increase to approximately 9 billion people. Are we doing things to help developing countries accommodate that growth in order to make the situation less volatile?

Gillespie: I think that the three major effects of population growth will relate to water, urbanization, and unemployed youths. So what are we doing in response? USAID is involved in economic development, job creation, water projects, and urban planning. But we are doing nothing to really prepare countries for their increasing urban populations.

Comment: Is there an explanation—that fits within the context of evolutionary theory—of why people who are wealthy are having, in many cases, so few children? Does this suggest a change in values, and is it likely to create a problem in the next 40 or 50 years? I understand the arguments about how poverty might stimu-

late large families for various economic reasons. But why would people who are wealthy refrain from having more children?

Gillespie: Child survival may play a very important role. The expectation of children living to adulthood is incorporated into people's decision-making process, and therefore, almost invariably, there's a change in the desire for fertility. That change actually takes several generations to take place, so the relationship between child survival and fertility is much more complex than it may at first seem. The other factor is that people realize the relationship between their number of children and lifestyle. That relationship is not as good as it used to be. In an agrarian based economy, with little technology, it was advantageous to have an extended family. Now, when you have inheritance, a large family actually decreases the family's power.

Comment: All the initiatives that focus on girls' education are really important. The relationship between the education level of the girl and her fertility is just incredible. For every year beyond four years that a girl goes to school, she later has one less pregnancy and 20 percent more future earning income. Providing her with other alternatives and more value in her society, through education, should be a continued focus, and hopefully we will find more money for that.

Comment: There are a lot of people who are unemployed and undereducated. There are many angry and rebellious youth. How do we find ways of lessening these pressures? What kinds of health services are needed? I think there is a real gap—which I know DIA is trying to reduce—with the NGOs. We've got to figure out how we can keep these issues from becoming so mysterious that we lose sight of the fact that the only way to address them is by having people come together and share information. To meet the challenges of today, we need to foster open discussion.

Comment: We have to recognize the appropriate limitations and use of classification. Just by virtue of CIA and USAID or NGO in the same sentence, we may stand accused of spying on an NGO, which we do not do, or of somehow being involved or tainted with the spread of AIDS. It is as bad as being accused of promoting crack-cocaine in some circles.

The point is that we are all concerned about the issue of unsustainable population growth. We have to broaden the constituency of people who are as committed as we are to trying to do something constructive. We must figure out a way to have at least the ability to talk to one other.

[Editor's note: This meeting also featured a speaker from the U.S. intelligence community who asked that his comments not be reproduced.]

Official Statements and Documents

Below are excerpts from recent official statements in which environmental issues are cited in the context of security institutions 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 to the United Nations Special Session on Environment and Development, The United Nations, New York 26 June 1997

... In our era, the environment has moved to the top of the international agenda... Preserving the resources we share is crucial not only for the quality of our individual environments and health, but also to maintain stability and peace within nations and among them.

... Here in the United States, we must do better. With 4 percent of the world's population, we already produce more than 20 percent of its greenhouse gases. Frankly, our record since Rio is not sufficient.

... The air quality action I took yesterday is a positive first step, but more must follow. In order to reduce greenhouse gases and grow the economy, we must invest more in the technologies of the future.

... We must create new technologies and development new strategies like emissions trading that will both curtail pollution and support continued economic growth. We owe that in the developed world to ourselves and, equally, to those in the developing nations.

... Many of the technologies that will help us to meet the new air quality standards can also help us to address climate change.

Excerpts from President Clinton's remarks at the Discussion on Climate Change, The White House 24 July 1997

... As the Vice President said, the overwhelming balance of evidence and scientific opinion is that it is no longer a theory, but now a fact that global warming is for real.

... If we fail to act, scientists expect that our seas will rise one to three feet, and thousands of square miles here in the United States, in Florida, Louisiana and other coastal areas will be flooded. Infectious diseases will spread to new regions. Severe heat waves will claim lives. Agriculture will suffer. Severe droughts and floods will be more common. These are the things that are reasonably predictable.

... I do want to say that I am convinced that when the nations of the world meet in Kyoto, Japan, in December on this issue, the United States has got to be committed to realistic and binding limits on our emissions of greenhouse gases.

Excerpts from President Clinton's State of the Union Address 27 January 1998

Our communities are only as healthy as the air our children breathe, the water they drink, the Earth they will inherit. Last year we put in place the toughest-ever controls on smog and soot. We moved to protect Yellowstone, the Everglades, Lake Tahoe. We expanded every community's right to know about toxics that threaten their children.

...Just yesterday, our food safety plan took effect, using new science to protect consumers from dangers like *e. coli* and salmonella.

...Tonight, I ask you to join me in launching a new Clean Water initiative, a far-reaching effort to clean our rivers, our lakes and our coastal waters for our children.

...Our overriding environmental challenge tonight is the worldwide problem of climate change, global warming, the gathering crisis that requires worldwide action. The vast majority of scientists have concluded unequivocally that if we don't reduce the emission of greenhouse gases at some point in the next century, we'll disrupt our climate and put our children and grandchildren at risk.

This past December, America led the world to reach a historic agreement committing our nation to reduce greenhouse gas emissions through market forces, new technologies, energy efficiency.

We have it in our power to act right here, right now. I propose \$6 billion in tax cuts, in research and development, to encourage innovation, renewable energy, fuel-efficient cars, energy-efficient homes. Every time we have acted to heal our environment, pessimists have told us it would hurt the economy. Well, today our economy is the strongest in a generation, and our environment is the cleanest in a generation. We have always found a way to clean the environment and grow the economy at the same time. And when it comes to global warming, we'll do it again.

STATEMENTS BY ALBERT GORE, JR.
Vice President of the United States

Excerpts from Vice President Gore's remarks at the Many Glacier Hotel, Glacier National Park, MT
September 2, 1997

... If we stay on our present course, scientists predict that average global temperatures will rise by 2 to 6 degrees Fahrenheit in the next century....That's why, if we fail to act, scientists believe the human impact of global warming will be severe:

Infectious diseases could spread, affecting families and children in regions that had been too cold for tropical viruses to survive. Farmers and rural communities could be in jeopardy, since farms depend on a stable climate to be productive. Back in 1988, when we faced both record temperatures and droughts, the United States lost a third of its grain supply. We could face greater floods, droughts, and heat waves.

... Our seas could rise by one to three feet, flooding thousands of miles of Florida, Louisiana, and other coastal areas. ... My purpose today is not to be alarmist ... But its time to face the facts: Global warming is real. We helped to cause it—and by taking reasonable, common-sense steps, we can help to reduce it. . .

... But we know that American efforts alone will never be good enough. Any real solution to global warming must be an international solution—including developing nations as well as industrialized ones.

This December, when the nations of the world meet in Kyoto, Japan, on this issue, the United States will work to achieve realistic, binding limits on the emissions of greenhouse gases.

STATEMENTS BY MADELEINE K. ALBRIGHT
Secretary of State

Excerpts from Secretary of State Albright's remarks at Saint Michael's College, Colchester, Vermont
7 April 1998

If we are to build the kind of future we want, we must also safeguard our environment. As Vermonters know all too well, acid rain, greenhouse gas emissions, radiation and sewage don't read maps, respect borders or even stop for customs. To preserve the health of any part of the globe, we must protect the entire globe.

Unfortunately, there are times when preserving a healthy world environment seems like mission impossible. We hear so often that the science is not certain enough, that population growth rates will not slow enough, that people don't care enough. And some still say that environmental protection is a soft issue, which can safely be dealt with another day, or better yet, by another generation. I say environment is a security issue and that unless we wish to betray our own children, we must act seriously and on all fronts to deal with it now.

Moreover, here in New England, where trees grow tall, water runs clear, and moose still wander in downtown Burlington, there is abundant evidence that bold action on the environment can yield dramatic results at an acceptable cost. After all, it has been less than 30 years since a Democratic Congress and a Republican President got together to override a determined opposition and enact the Clean Air and Clean Water Acts and create the EPA. Since then, we have returned a host of lakes to health and human use, substantially reduced air pollution, and proved that what some called a wasteful expense is truly a pragmatic investment in

America's prosperity and good health.

Today that same bipartisan spirit is needed to forge a worldwide strategy to combat global climate change. The Clinton Administration is committed to doing its part at home by using the force of the market and the power of American innovation to cut our emissions and keep our economy growing. And we are determined to lead in developing a global action plan based on sound science and sensible cooperation—a plan that makes sure that all nations play a part and in which innovation and initiative are rewarded.

Each of these efforts will contribute to a more secure, just and livable world.

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**STATEMENTS BY TIMOTHY E. WIRTH
Under Secretary of State for Global Affairs**

Excerpts from Under Secretary Wirth's remarks at the Western Hemisphere Defense Environmental Conference, sponsored by the United States Southern Command and Office of the Deputy Under Secretary of Defense for Environmental Security, Miami, Florida 3 June 1997

... Consider these basic facts. Five biological systems—croplands, forests, grasslands, oceans and fresh waterways—support the economy of this hemisphere and indeed the entire world. Except for fossil fuels and minerals, they supply all the raw materials for industry; and provide all the food. In other words, virtually all economic activity is dependent in some way on the natural environment and its underlying resource base. Thus, when that environment is polluted or degraded or otherwise diminished, our economic capacity is reduced as well.

... Moreover, our population is increasingly urban, and cities—especially large cities—present particularly intractable environmental difficulties. On a bad day in Los Angeles or Mexico City or Santiago, the air itself becomes a direct threat to human health. The children that are growing up in such a polluted atmosphere run the risk of life-long mental and physical impairments.

... Before I close, I would also like to call attention to one idea, a suggestion whereby sound environmental policy might be used as a component of conflict prevention. The idea is the creation of international parks along difficult or controversial borders. Recently, the governments of Colombia and Panama suggested establishing a series of nature parks along their common border, as a way to reduce tension there.

... There is already at least one outstanding example

of using a park as a way to help solve a difficult and long-standing border dispute. I am thinking of the Chamizal National Memorial, which the United States and Mexico established in 1963 as a key part of the agreement that resolved a hundred-year old border dispute along the Rio Grande. Today, the Chamizal park—located between El Paso and Ciudad Juarez—provides more than just a location for chamiza and carrizo and other riparian vegetation to grow; it also provides a venue for cultural ties and bonds to flourish....

Excerpts from Under Secretary Wirth's remarks before the Independent World Commission on the Oceans, Providence, Rhode Island June 6, 1997

... [W]hile the oceans were once thought to be a remarkably inexhaustible and resilient resource, they are starting to show real signs of stress. The productive and regenerative capacity of the oceans are increasingly threatened by the introduction of pollutants, over-utilization of marine resources, habitat destruction and coastal development.

... The Law of the Sea Convention, now ratified by 116 governments, is one of the most ambitious and complex treaties ever put into force. The product of 25 years of negotiations, it is a remarkably comprehensive, fair and progressive agreement, establishing a balanced and dynamic legal framework for all aspects of ocean management. It provides the legal certainty necessary for the development of ocean industries; it establishes sound conservation guidelines to safeguard the future of the marine ecosystem; and through its dispute settlement provisions, the Convention provides mechanisms to ensure compliance. ...

Excerpts from Under Secretary Wirth's remarks before the Subcommittee on Energy and Power Committee on Commerce, U.S. House of Representatives 15 July 1997

... [T]he path we are on is cause for significant concern. Climate change is likely to have wide-ranging and mostly adverse effects on human health. Both natural and managed ecosystems are at risk. The viability and location of forest and agricultural zones will change significantly.

Moreover, virtually all the studies on the effects of climate disruption have focused on predicted doubling

of atmospheric concentrations of greenhouse gases. But unless significant actions are taken early in the next century, it is very likely that atmospheric concentrations will, by the year 2100, nearly triple the pre-industrial level and rise higher than any point in the last 50 million years. Changes to our climate system would also continue beyond the effects that the current studies predict; the risks would increase dramatically as concentrations continue to rise. Moreover, there is no reason to believe that these additional effects would be linear; they would most likely take unpredictable and highly undesirable paths.

... So action by industrialized nations alone will not put us on the road to safe concentrations of greenhouse gases; we need action by the developing countries as well. But it is very clear from all our discussions and negotiations to date that if the developed countries, with our current economic capacity, technical capability, and energy intensive life-style, don't go first—setting the example and reducing emissions—then developing countries will not act either. We must lead the way. . . .

STATEMENTS BY CAROL BROWNER

Administrator, Environmental Protection Agency

**Excerpts from Administrator Browner's remarks at the Environmental Business Council of New England, Boston, Massachusetts
October 3, 1997**

... We still have major environmental and public health challenges ahead of us. And what makes them more difficult is the fact that, in many cases, they are not as obvious to the majority of Americans. But they are very real, nonetheless.

... We have taken measures to improve our air quality—setting stronger public health air quality standards for the first time in two decades—standards that will prevent thousands of premature deaths each year, and improve health protections for people of all ages.

We have enacted new laws to protect our drinking water and our food from dangerous contaminants.

... This new generation of environmental protection means something else, too. It means what the President has said, on many occasions, and what has proven to be true: that environmental protection and economic progress do go hand-in-hand.

You know that addressing the challenge of global warming is not about ratcheting down our economy. . . . Rather, it is about investing in new technologies that make our industries more efficient, more profitable—and cleaner in the process.

... I'm talking about more efficient motor systems in factory equipment, advanced turbine systems, computer workstations and household appliances that use less electricity—and thus reduce global warming emissions—all through available technologies.

According to the National Academy of Sciences, we can cut global warming pollution by one-fifth—right now, at no cost—simply by using technologies that are already on the market.

STATEMENTS FROM RICHARD LUGAR
Senator (R. - Ind.)

**Excerpts from Senator Lugar's Remarks at the Senate Agriculture Committee Hearing on Global Warming
March 5, 1998**

...In preparation for Kyoto, the Senate passed the Hagel-Byrd resolution in July, urging the President not to sign any treaty which failed to include emissions limitations on developing countries. However, the United States signed the Kyoto Protocol, with administration officials conceding that it does not include "meaningful participation" by the "key developing countries." China and other developing countries have reportedly expressed adamant opposition to limit even their rates of growth in greenhouse gas emissions.

The national debate over the Protocol may force this nation to overcome its tendency to separate energy and environmental policies. In reality, many of our environmental problems are related to our need for energy. Changes in energy policy are essential to addressing environmental concerns.

Events beyond our borders also have tremendous impact on American energy security and environmental interests....

...To address these many issues, I believe that the President should establish an interagency Energy and Environmental Security Task Force. Such a task force should include the National Security Council, the Council of Economic Advisors and high level representatives of pertinent agencies such as USDA, Energy, Transportation and the Treasury. We cannot cope with any of our pending environmental or energy security problems without a new energy policy.

We must also address the serious threat of worldwide deforestation. Experts indicate that about 20 percent of the increase in greenhouse gas concentrations is due to the elimination of carbon sinks in our soils and forests. We are losing 30 million acres of tropical forests per year. Yet the Kyoto Protocol may not allow the United States to count projects which we fund in developing nations to avoid deforestation and promote sustainable agriculture as part of our contribution to addressing the climate change problem.

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**STATEMENTS BY JOHN GANNON
Chairman of the National Intelligence Council**

**Excerpts from remarks by John Gannon to the Washington International Corporate Circle
31 October 1997**

...We think it is critical that policymakers think beyond the crises of the day and consider some of the evolutionary trends that will shape our future, both from a national security and an economic perspective....

First, population will increase by 1.2 billion to over seven billion by 2010. About 95 percent of this growth will be in developing countries. This growth will be accompanied by increased urbanization: about half of the world's population will live in cities compared with one third today. . . . Countries such as Mexico and Saudi Arabia that hold key geopolitical positions will be among those heavily affected by population pressures. In some societies a "youth bulge"—the growing number of people between 15 and 24—will strain educational systems, infrastructure, and the job market.

. . . For the industrialized world, the population problem will not be associated with growth but with increasing life spans and decreasing birth rates. The "Social Security-Medicare" debate already reverberating throughout the developed world will become even more acute. Governments will struggle to provide social welfare and health services to an aging population, while the labor force—the pool whose taxes help finance these services—shrinks.

In the Former Soviet Union the issue is not buttressing a safety net, but creating one to cope with a wide range of economic and social problems, the solutions to which will take many years of concerted effort in health, environmental, and economic policies. The extent of Russia's demographic ills is reflected in a sharp and unprecedented decline in male life expectancy.

Second, the NIC study points to a growth in per capita income....

...Growth will increase demands on infrastructure—such as water, energy, communications, waste disposal, urban transportation, public health, housing, and education. Failure to accommodate these demands will trigger disaffection with government, emotional backlashes against modernization, and clashes against Western policies, philosophies, and presence.

The third trend will be the problem of feeding a burgeoning population. . . . [F]ood production is likely to keep pace with overall demand. The authors anticipate genetic engineering fueling a fourth agricultural revolution by the end of this time span. As in the past, shortages will be man-made. Serious pockets of poverty will put people in developing countries—particularly in Africa—at risk of death from disease and starvation.

. . . The fifth trend is that growing populations and per capita income will drive the demand for more energy, particularly as the Chinese and Indian economies expand. By 2010 the world will require added production of petroleum on the order of what OPEC produces now. Technological advances, however, can meet this demand. Problems will arise not out of overall shortages but out of short term disruptions in the flow of oil stemming from political-military instabilities. ...

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**STATEMENTS BY JAVIER SOLANA
Secretary General of NATO**

**Excerpts from Secretary General Solana's remarks at the International Conference on "The Future of NATO's Mediterranean Initiative" Rome
10 November 1997**

...[W]e should consider the importance of the Mediterranean region to the rest of Europe from the viewpoint of trade, investment, maritime transport, natural resources, environmental interdependence, patterns of human migration, and so forth. Taken on this broader socio-economic level, we get a better picture of the growing ties between the Euro-Atlantic area and the Mediterranean basin.

What gives further coherence to this approach are certain facts, starting with the obvious geographic proximity of the southern and eastern Mediterranean littoral to continental Europe. There is also population growth. The North African population, for example, is growing at an approximate rate of 2.5 percent annually, and is expected to increase from 63 million in 1990 to perhaps 142 million by 2025. This large increase of population will put an enormous burden on the cities

of the area, where housing, sanitation, employment, and food distribution are already under serious strain.

Consider another aspect—that of human migration. There are about six million immigrants from the Maghreb residing in the European Union, distributed mainly in France, Italy and Spain. Such large inflows are another factor in the equation that ties together the stability of countries on the northern and southern shores of the Mediterranean....

STATEMENTS BY NAFIS SADIK
Executive Director
United Nations Population Fund

**Excerpts from Dr. Sadik’s remarks to the East Asia and Pacific Regional Conference of the Society for International Development, Tokyo, Japan
1 April 1997**

...The challenge before us as we mark the fifth anniversary of Agenda 21 remains as it was in 1992: to balance population growth with resources for development, attack poverty and secure women’s equality. In the intervening five years however, we have reached international consensus on many issues which were unresolved at the time of Rio. Among them are the relationships among population, gender and the environment.

The International Conference on Population and Development in 1994 agreed that population issues are central to the search for sustainability. ICPD and the Fourth World Conference on Women agreed that gender equity and equality are part of the corpus of internationally-accepted human rights: as such they are essential outcomes of sustainable development policies; but they are also central to the solution of population problems, and to environmental integrity.

...The world’s population now stands at nearly 5.85 billion and will grow by 81 million a year during this decade. We added one billion people to the planet in the last 11 years.

...Population, resources and environmental issues are linked in complex ways and at different levels of development. For example, most environmental damage is done by the so-called “top billion” richest people. Industrialized countries contribute to environmental degradation through higher per capita resource consumption and large-scale use of polluting technologies; the per capita energy use of the United States is 18 times that of Bangladesh. At the same time the industrializ-

ing countries of Asia and Latin America are rapidly increasing their contribution to environmental stress.

At the other end of the scale, deepening poverty, especially in the least developed countries and in rural areas of the developing world, may combine with population growth to produce another set of resource and environmental constraints.

The “bottom billion”, the world’s poorest people, have few options. Population growth and uneven population distribution can overwhelm traditional sustainable land use practices; and for the poor there are no alternatives. The poor are not responsible for their poverty, or ultimately for the environmental damage it causes. Where most land is in large holdings, the poor may be forced into artificially small or marginal areas. Poverty prevents the adoption of new technologies to halt or slow down environmental degradation. Misdirected development policies have not reached the poor or have actually made them poorer. The cumulative environmental impact of this “bottom billion” is substantial and growing as their numbers grow.

**Excerpts from Dr. Nafis Sadik’s remarks to the Center for International and Area Studies, Yale University, New Haven, CT
17 April 1997**

More than 1.2 billion people—one fifth of humanity—live in South Asia (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka). There are wide variations in birth and death rates within the sub-region, the average annual population growth rate is over 1.8 per cent. These eight countries contribute more to the growth of the world’s population than any other subregion.

As a result of past rapid population growth, combined with persistent poverty and the generally low status of women, these countries have been sorely challenged in efforts to improve their people’s quality of life. Half a billion South Asians, nearly half of the world’s poor, live in extreme poverty. This widespread poverty and rapid population growth, along with persistent social and gender inequities, are part of a vicious cycle which is closely linked to prospects for sustainable development. It must be broken by explicitly integrating population into economic and development strategies; otherwise, the cycle will continue, contributing to environmental degradation and resource depletion.

This widespread poverty and rapid population growth, along with persistent social and gender inequities, are part of a vicious cycle which is closely linked to pros-

pects for sustainable development. It must be broken by explicitly integrating population into economic and development strategies; otherwise, the cycle will continue, contributing to environmental degradation and resource depletion.

...Empowering women through education and better health care, and moving towards gender equality and equity in law and practice will be the basis for improving the quality of life and alleviating poverty elsewhere in the subregion. I am glad to say that I see signs in the last few years at all levels that the process is taking firm hold in South Asia.

The key can be found in the consensus agreements forged at a series of global meetings in this decade—particularly the 1994 International Conference on Population and Development in Cairo and the Fourth World Conference on Women in Beijing a year later. These spell out a human-centred approach to development which focuses on meeting people’s needs for education and health care, empowering women and achieving gender equality and equity.

...This approach to population and social development

has been accepted by all governments in the region as part of the global consensus. The evidence is that they are taking it seriously. Each country in South Asia must define its policies and programmes based on national priorities and particularities. But as Cairo and the other conferences emphasized, any effective strategy will require development partnerships involving government, civil society and the private sector. And considerable resources will have to be mobilized, from both domestic sources and international development assistance.

...As the Cairo conference emphasized, poverty and social and gender inequity influence and are influenced by population growth, structure and distribution. Efforts to slow population growth, reduce poverty, achieve economic progress, protect the environment, and reduce unsustainable consumption and production patterns are mutually reinforcing. Investments in social infrastructure basic education, sanitation, drinking water, housing, food supply and health care, including reproductive health and family planning will speed up sustainable development and poverty alleviation, and help to achieve population objectives and improve people’s quality of life.

New Publications

Conflict and the Environment

by Nils Petter Gleditsch (editor)

Dordrecht: Kluwer Academic Publishers, 1997

Reviewed by Simon Dalby

This book is, so far, the most comprehensive single publication in the area of environmental security. At six hundred pages it is also clearly far the largest book yet to be published in the field. Its thirty five chapters arranged in six substantial sections present the proceedings of the NATO Advanced Research Workshop on Conflict and the Environment held in Bolkesjø Norway in June 1996.

A conceptual section on environmental security follows a stand alone introductory chapter by Sverre Stub which contextualises matters in terms of the need for sustainable development and the necessity of understanding the environment as a common human interest. The editor has taken the unusual step, and in this case clearly excellent decision, to publish critical voices first in this volume. These provide a number of templates against which the reader can evaluate the later chapters (making the admittedly rather large assumption that the chapters are read sequentially in such a large volume.)

The first three chapters in the theoretical section on the concept of environmental security, by Lothar Brock, Ronnie Lipschutz and Antonio Hill present different but critical voices that alert the reader to many of the difficulties in thinking about conflict, environment and security. Lothar Brock points to the dangers of securitizing the concept of environment, Ronnie Lipschutz to the difficulties if the environment is presented as a deterministic cause of insecurity or conflict, and Antonio Hill to the important conceptual assumptions about values that often get lost in discussions of both analytical frameworks and policy options.

Following these cautionary notes Richard Matthew suggests some careful conceptual clarifications that might produce more useful interchanges among environmentalists, security analysts and practitioners than have so far taken place. The editor's own contribution rounds out the conceptual section by linking the environmental security discussions to the literature on the democratic peace. He makes the case that because democracies do not fight each other and usually have fairly good environmental records, then the possibilities for both peace and environmental progress are linked; although in doing so he strangely omits detailed discussion of the importance of resource extractions and flows in the processes of environmental degradation in non-democratic states.

The second section of this volume presents seven case studies under the title of environmental degradation. (Additional papers from the workshop on the topic of environmental degradation and its links with armed conflict, are published separately in a special issue of the *Journal of Peace Research* in May 1998.) Alexander Varshavsky and Leonid Varshavsky use a mathematical model to suggest, among other things, that Samuel Huntington's ideas of clashing civilizations are not very useful to understanding global instability. Mats Hammarström examines the period from the early 1950s to the mid 1970s suggesting that during this period major power military interventions were not related to access to strategic minerals. His analysis provides further evidence that assumptions about future resource shortages leading to wars is at best highly questionable.

Nadir Mohammed's chapter succinctly summarizes the relations between poverty, economic deterioration, environmental degradation and conflict in what he calls the 'development trap' in Africa. Given the difficulty achieving poverty reduction and the resources wasted in militarization, he suggests starting with confidence-building and demilitarization. Mohammed hopes that generally improved security and the possibility of using resources freed from military to tackle poverty and environmental destruction might provide a way out of the interconnected societal crises of Africa. Robert Stranks tackles the question of China and the possibility of environmental degradation leading to armed conflict as its economic and demographic changes impact on a restricted resource base. While migration is important, it is not induced by environmental stress, and he concludes that in the short run environmentally-induced conflict is unlikely because the social and political requirements are absent despite severe environmental stress.

Alexander Kaffka's survey of the legacy of Soviet environmental despoilation optimistically concludes that, despite numerous difficulties and slow progress, the era of complete environmental neglect is now over at least as far as Russia is concerned. The following chapter by Anton Ivanov offers a fascinating and innovative account of the possibilities of ethnic environmental ethics as a way to both reduce conflict over environmental matters in third world states and between modernizers and indigenous peoples. Using the Yakutian people and

the post-communist experience in Siberia, Ivanov engages the Western academic literature on environmentalism and environmental ethics and suggests that indigenous understandings of environment and resources may provide much better ways of diffusing conflicts over development than technocratic managerial models. The final short chapter in this section suggests a much more pessimistic outlook for Russia's north in the region of Arkhangelsk. However, the focus on the inadequacies of technocratic concern in the region might suggest that here too, Ivanov's analysis might offer alternative ways of grappling with the problems of environmental destruction given the short term exigencies of difficult economic times.

The third section has two chapters on fisheries, one by Jennifer Bailey on the question of high seas fisheries stocks and the extension of state sovereignty. She argues, contrary to the usual assumptions that UN agreements and international management will promote peaceful cooperation, that the complexity of the issues and the demands of numerous groups may in many cases precipitate conflict as fish extraction increasingly becomes a zero sum competition between many actors. Marvin Soroos' analysis of the 1995 Turbot war between Spain and Canada over fish caught just outside the 200 nautical mile limit off Canada's coast suggests that such conflicts are perhaps inevitable, but can, as happened in this case, spur on the further development of international agreements and the better management of endangered stocks.

Three chapters on environmental refugees constitute the fourth section of this volume. In a partial reprise of some of Strank's arguments on China, Astri Suhrke argues that the security paradigm usually confuses the issues relating to migration and especially the role of environmental factors in setting people in motion. The chapter argues for an understanding of the complexity of the causes of migration, a clear focus on the specific socio-economic context of the migration destination area, and the role of the state in facilitating economic integration of the migrants. These factors usually provide contextually appropriate explanations that refute the simple assumptions that migrants cause conflicts. Shin-wha Lee argues that despite the numerous definitional difficulties with the concept, there is good reason, on humanitarian grounds, for taking environmentally displaced people seriously as the political and moral equivalent to traditional political refugees. Evan Vlachos extends these arguments by compiling a typology of causes of environmental refugees and concluding that the problems of forced relocation are tied into the many humanitarian crises that currently afflict the planet. Once again these chapters suggest that environmental security is not a matter that can be seriously discussed without addressing the complexity of the contemporary human condition in its specific contexts.

The largest section in this collection is not surprisingly, given the amount of attention recently paid to matters of 'hydropolitics,' on the question of water conflicts. Nearly a quarter of the volume, and nine chapters, address the multiple issues in this field from a variety of disciplinary backgrounds. Francisco Correia and Joaquim de Silva tackle transboundary issues in water resources focusing on the European Union and the international legal frameworks of water management. They suggest extending international river management commissions and taking special account of extraordinary events such as floods and industrial accidents leading to river contamination. Ramón Llamas narrows these concerns to focus specifically on the Iberian peninsula where numerous conflicts about water have been peacefully resolved over the last century.

Three chapters, by Peter Beaumont, Steve Lonergan and Stephan Libiszewski tackle water issues in the Middle East. Beaumont argues that water wars are unlikely in the region as water scarcities arise when extensive use of low cost irrigation water is involved. Given the possibility of trading for food, water scarcity can be avoided through fairly easy substitution. And it is unlikely that war will result when water is used for more pressing concerns and food imported. Lonergan extends this argument suggesting that inequities in water distribution are a problem in the relations between Israel and Palestine but that there is little evidence that water has been a cause of warfare in the region. Libiszewski analyses the 1994 peace treaty between Jordan and Israel and suggests that the technical negotiations about water management have provided a useful diplomatic complement to the formal political negotiations. Such a model might offer opportunities for political progress on disputes elsewhere, as Ashok Swain writes about in his chapter, on sharing water in the case of rivers that cross national frontiers. Swain's analysis emphasizes that while there is alarm about water as the potential cause of conflict, in many cases shared rivers have stimulated cross-boundary cooperation.

The final three 'hydropolitics' chapters tackle water issues in the former Soviet Union; Stefan Klötzi analyzes the 'Aral Sea syndrome,' as he terms the complex of institutional, political, economic and environmental circumstances of the 'ecoregion' involved in the destruction of the sea. The importance of irrigation to agriculture, and the inadequacy of the remnant Soviet institutions to deal with water allocations between the new republics, suggest that conflicts are likely and that new institutions and cooperative arrangements will be needed before many of the problems of the region can be tackled. Klötzi concludes that outside help is badly needed. Some help from international agencies, however limited, is likely to be better than none. The difficult legacy of ineffective institutions is also important in Alexandr Spirin, Olga Turevskaya and Sergey

Turevskiy's examination of the challenge presented by the industrial pollution of the Severesky Donets River area in the Ukraine, and in Lidya Svirenko and Alexandr Spirin's analysis of the ecological consequences of the inappropriate use of irrigation, the water logging of rich soils and the destruction of traditional wetlands in the Ukraine.

The sixth and final substantive section deals with social and political responses to the environmental problems identified in the earlier sections. Oddvin Horneland offers a conceptual model that is designed to allow defense policy makers to evaluate the impact of defense forces on the environment. Detlef Sprinz develops an economic model of environmental security policies that state governments can apply both nationally and internationally. Katrina Rogers explores the lessons that can be learned from cases of international cooperation where conflict has been avoided. She suggests distinguishing between short-term ameliorative measures under the rubric environmental security and long-term sustainable activities under the term ecological security. The latter requires a serious political commitment to bring about social change.

Karin Dokken argues that fear of environmentally-induced conflict can act as a spur to regional integration and international cooperation so formulations of problems in terms of environmental security can be

politically useful. Arthur Westing's analysis of international law and the environment includes specific suggestions that an international prohibition on the use of nuclear weapons is necessary and that natural heritage sites should be declared demilitarized sites. Oleg Kolbasov extends the arguments about responses to discuss international environmental justice and the recent establishment of the International Court of Environmental Arbitration and Conciliation. Valery Gergel discusses the possibilities of a World Environmental Code which might offer potential for peacekeeping and the settlement of environmental disputes.

Clearly this volume reflects the diversity of themes and approaches that currently fall under the rubric of environmental security. The concluding rapporteur's report by Geoffrey Dabelko suggests that the workshop's organizers recognize that there is no single framework that can encompass all the research and policy analysis germane to this theme. The diversity of disciplinary topics addressed, and the variety of methodological concerns articulated, suggests that what is going on here is also a political debate about the constitution of appropriate modes of dealing with political uncertainties that have some fairly obvious 'environmental' vectors.

One of the major conceptual weaknesses in all this discussion, both in this volume and the larger debate, of which this volume is a comprehensive encapsulation, is that analyses of the causes of degradation are underdeveloped even in the discussion of the post-Soviet societies and the especially pressing environmental plight in these regions. This despite the promising opening chapters which suggest that these matters are important. Especially germane is the comment (page 8) in the introductory chapter by Sverre Stub that "many of today's production and consumption patterns continue to be unsustainable." He goes on to argue that changes are needed in both the patterns and volumes of consumption, a matter that will require strong political action. Ruefully he then comments "Today, political courage and will are perhaps the scarcest resources of all; we need only to look at the disproportion between military spending and the efforts to change the unsustainable course of human behavior."

Brock's more general discussion of this theme in terms of the global economy, is not taken up in many of the papers where the theme might shed further light on topics of degradation and the other trans-boundary relationships that are important in unraveling the causes of the current predicament. Only the more philosophically informed chapters do this, but the absence of detailed development of these themes shows the limitation of policy and technocratic 'solutions' where the nature of the problem to be solved is not clearly specified. As Rogers, Lipschutz, Ivanov and some of the other authors also imply, these larger issues are crucial if the questions raised in the numerous case stud-

JPR cover

ies in this volume are to be adequately conceptualized. More than a technocratic approach is needed in dealing with these urgent and important matters.

A second important theme follows from these inadequacies of the technocratic approach. This is that the basic assumption in the introduction, of a common fate for all humanity, simply doesn't hold when empirical analysis is undertaken on the ground. Many of the chapters point to the regional particularities of degradation and the institutional history of specific conflicts as being important to resolution of difficulties. The crucial point is that the specific causes of degradation are different in different places. The simple and prevalent assumptions that economic development and liberal democracy have all the answers has to be questioned, as Ivanov and Rogers do, when the specific causes of degradation are investigated in their particular contexts. As this volume in general suggests, this theme obviously needs much further work by scholars in the field.

Despite these limitations, which are limitations in the field rather than specifically in this volume alone, this book deserves widespread dissemination as the most substantial single volume in the field. This volume is both a major academic statement in the field and significant because it has influential sponsors. It might even offer some useful potential as a teaching text although the price is likely to prove prohibitive. Despite the diversity of the contents and the number of contributors it is a remarkably well-edited compilation, although both factors stretch thematic continuity exceedingly in places. As a whole, the book raises numerous questions that need both debate and analysis. It offers an overview of both the current state of the discussions on environmental security and the diversity of arguments and research strategies, and as such, is a most useful addition to the literature in the field.

Simon Dalby is Associate Professor of Geography at Carleton University in Ottawa.

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**Environmental Degradation as a Cause of War:
Environmental Conflicts in the Third World and
Ways for their Peaceful Resolution**

by Günther Baechler, Volker Böge, Stefan Klötzli, Stephan Libiszewski, and Kurt R. Spillmann
1996 Vol. I, 401 pp.

**Environmental Degradation as a Cause of War:
Regional and Country Studies**

by Günther Bächler and Kurt R. Spillmann (editors)
Vol. II, 720 pp., Vol. III, 440 pp., 1996
Berne: Swiss Peace Foundation/Swiss Federal
Institute of Technology

Reviewed by Wenche Hauge

In 1996 the Swiss Environment and Conflicts Project (ENCOP) published its final report in the form of three volumes on Environmental Degradation as a Cause of War. The three volumes together make up an impressive gathering of case studies accompanied by a thorough review of theoretical approaches in Volume I. In addition to the contributions by ENCOP's own team of researchers in Volume I and II, Volume III contains contributions from external experts. The two volumes of case studies cover both regional and intra-state conflicts and contain analyses of violent as well as non-violent conflicts. All the case studies, except two, are published in English, whereas the theoretical volume is in German. Since this is one of the few more comprehensive theoretical studies on the relationship between environmental degradation and conflict, it will hopefully be translated into English.

The theoretical volume is unique in its efforts to link the concept of development more clearly to the problems of environmental degradation and conflict. It points to the fact that human-induced environmental degradation does not come about in a vacuum, but is linked to processes that intervene in the interplay between human beings and nature. At the core is modernization. Human-induced environmental degradation is brought about by: 1) destruction of social structures which were once well-adapted to ecological systems of different areas, and 2) by current needs of poor countries to develop, that exert high pressure on their natural resources. Pursuing export-led growth strategies in non-industrialized countries, many of them still relatively monocultural, has serious consequences, not only for the quality of land, but also for its distribution. A negative spiral of land degradation and marginalization is frequently seen. There is often a dividing line between elites privileged by participation in a few energy intensive projects, and poor peasants and nomads who are marginalized off the good land. The costs and benefits of dam projects and mining activity are thus also unequally distributed.

Moving beyond the economic needs of the state and on to the concept of "ecological regions" and "socio-ecological heterogeneity", the volume draws heavily on theories and concepts from resource geography. It is argued that the material basis for conflicts caused by environmental degradation lies in the dialectic process between underdevelopment, modernization and socio-ecological heterogeneity and how these factors influence the transformation of renewable resources. In addition to the material or structural basis for conflict, the analysis also includes a chapter on the actors in conflict and how their actions and preferences are formed. This is very well linked to the structural background.

Against the background of this theoretical analysis, and based on a large number of case studies, ENCOP has produced a typology of conflicts where

human-induced environmental degradation is at the core. The typology could also be referred to as conflict dimensions, since most often more than one dimension exists in each conflict. The typology is further divided into three categories: a) intra-state, b) intra-state but with inter-state aspects / internationalized or c) inter-state/international. These typologies are referred to as: (Type A I) Center-periphery conflicts; (Type A II) Ethnopoliticized conflicts; (Type A III) Regional migration conflicts; (Type B IIV) Cross-boundaries migration conflicts; (Type BV) Demographically-caused migration conflicts; (Type CVI) International water conflicts; and (Type CVII) Conflicts caused by global environmental degradation.

As mentioned, the two volumes of case studies cover both regional and intra-state conflicts and contain analyses of violent as well as non-violent conflicts. Most of the case studies start with a solid introduction to the ecological conditions of the country / region and are followed by historical explanations of current social structures. These parts investigate developments that have led to disruptions of the basis of living for people. One example is the end of the trans-Sahara pre-colonial trade, which produced serious consequences for nomad groups in Niger and Mali.

Ethnic cleavages are also critically explored against the background of the concerned groups' material basis for living. Some of the case studies illustrate that this variable may have contributed much to current formations of ethnic groups, as in Rwanda. Various aspects of modernization are also analyzed critically. Export-led growth frequently erodes natural resources, especially soil, and further skews an already unequal distribution of resources. Cleavages and fault lines in societies are reinforced, and sometimes also created by various modernization projects. Mining activity and large dam projects force large groups of people to migrate whether internally or across boundaries. These projects may also create upstream / downstream problems, as in the case between India and Bangladesh.

Needless to say, not all the case studies conclude that human-induced environmental degradation is an important factor in the conflict. One example is the case study of Algeria, where the environment constitutes a minor factor in the conflict. Other conditions, like a failed development strategy, a drop in international oil prices, a high foreign debt, a lack of opportunities for young people or a growth of religious fundamentalism combined with the lack of a democratic outlet are presented as main causes of the conflict.

The case studies give no simple answers to why conflicts develop. Rather they analyze and illustrate the complex interaction between historical factors, development of social and economic structures, ecological fragility and heterogeneity, and cultural factors in the conflict process.

The three volumes from ENCOP bring the aca-

demical discourse on the relationship between the environment and conflict several steps farther because of the solid theoretical framework and the large number of case studies attached to it. It is the art of simultaneously encompassing complexity while discovering patterns which makes this contribution valuable.

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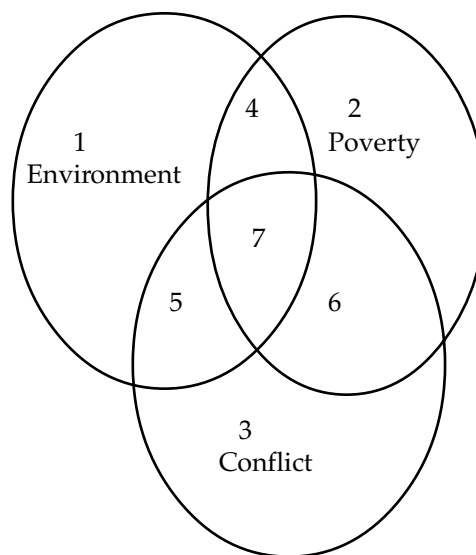
**Research on Environment, Poverty, and Conflict :
A Proposal**

by Dan Smith and Willy Østreg (editors)
Oslo: International Peace Research Institute
The Fridtjof Nansen Institute, 1997, 109 pp.

Reviewed by Ashley Miller

In positive terms, we wish to identify the factors that regulate the relationship between sustainability, peace, and equity; or in negative terms, to identify the factors that regulate the relationship between environmental degradation, poverty, and conflict. (p. 5)

Researchers at two prominent Norwegian NGOs, the International Peace Research Institute (PRIO) and the Fridtjof Nansen Institute (FIN) seek to expand the discussion of environmentally sustainable economic development through the exploration of a third variable in the environment and security relationship - poverty. As the relationship between environment and security informs the study of environmentally sustainable development, the contextual setting for much of the field is in impoverished countries of the third world. Thus, poverty is identified as an important and overlooked variable. The addition of the poverty variable produced the following research concept for environment, security, and poverty:



1. Environment
2. Poverty
3. Conflict
4. Environment & Poverty
5. Environment & Conflict
6. Poverty & Conflict
7. Environment, Poverty & Conflict

PRIO and FIN use this “tri-circle model” as the logical framework for their research agenda. This report marks the initial findings of their model and the foundation from which this proposed program could be “adopted and implemented in the future research portfolio of the Norwegian Research Council” (p. 5). The research program’s interest in adding the poverty variable is coupled with a responsibility to analyze the existing work to identify the theoretical and methodological implications of this new variable.

Commissioned researchers Valerie Percival and Carsten Rønnfeldt examined the field’s literature and theories. They diagrammed its topical and theoretical shortfalls in order to influence the research agenda through identification of previously excluded topics such as poverty. Although Percival and Rønnfeldt wrote separate documents for the report, together their works encompass the collective narrative of environment and security. From Rønnfeldt’s database survey of the research to date and literature review of the first, second, and upcoming third waves of environment and security field research to Percival’s thorough examination of the leading methodologies including the important work by the University of Toronto, the two researchers mark the “breadth and depth on the links between environmental degradation, poverty, and conflict as well as the methodologies underpinning this research” (p. 7). Both Percival and Rønnfeldt utilize the tri-circle model as the framework for their analysis of current research.

The authors echo a similar concern that is pervasive throughout linkage of environment and security—the methodology of the case study. Percival and Rønnfeldt call for the examination of null cases, or situations in which environmental degradation is present but conflict does not occur. Case studies should include examples of environmental degradation and cooperation (non-conflict). This process would bring integrity to the case study methodology as well as set up an additional element of comparative analysis in the political processes of conflict and cooperation. Percival queries: “If one of the world’s greatest ecological disasters [the shrinking of the Aral Sea] has not produced violent conflict, what predictive or explanatory value remains in the theory?” (p. 30).

Percival’s section in the report produces a review and critique of Thomas Homer-Dixon’s Toronto Group at the University of Toronto. The Group’s large theoretical contribution to the field comes through its pro-

cess tracing and case study methodology. As a former staff member of the Toronto Group, Percival provides a comprehensive overview of their methodology, and then poses unanswered questions to both the Group and the field as a whole. What of environmental scarcity’s inextricable link to other “contextual” factors that lead to conflict? What problems are presented by the methodology’s inability to fully separate from those economic and political factors? This interconnectedness increases the difficult task of designing effective methodologies and reinforces the need to examine null cases.

Poverty adds to the complexity of linking environmental scarcity to violent conflict due to its interaction with all the other contextual factors as well as its objective and subjective nature, according to Percival. Poverty becomes an intervening factor as environmental scarcity does not cause degradation until poverty forces the people to “ecological marginalization.” This tie between poverty, environmental marginalization, and scarcity leads Percival to adapt the Toronto Group model with the addition of poverty. Percival understands how oversimplifying these factors may produce a deterministic causal path to violent action: “Researchers also need to examine if and how the presence of environmental scarcity and poverty changes opportunities for collective actions—through heightened group identities, declining institutional capacity (the state in particular), and weakened state-societal relations” (p. 24).

The integration of poverty into the investigation of environment and conflict allows Percival to recommend other important research agendas that would expand the field:

1. *International Political Economy* - Using structural adjustment policies as a point of departure, the emphasis on production stresses monetary resources, environment, and social structures. The allocation of resources shifts toward the productive sectors and away from others (especially the public sector). This dynamic affects each variable in the environment, poverty, conflict equation by increasing environmental degradation and poverty, possibly the conditions for violent conflict.
2. *Gender* - Presently, little research is conducted on women and conflict. Yet, gender analysis should examine the total effects of environmental scarcity, poverty, and violent conflict on men and women. Gender studies should help elucidate the social effects of environmental scarcity, poverty, and conflict.
3. *Health* - The well-being of a society is often measured through health indicators. The application of this strategy could prove an effective means of explaining the linkage between environmental scarcity, poverty, and conflict. These health indicators could possibly lead to a predictive measure of potential conflict.

4. *Post-conflict reconstruction* - This research reverses, in part, the environmental scarcity, poverty, conflict relationship. The period just after war contains many lasting effects of the violent conflict and brings many state-society issues to the forefront. What are the circular links between pre-war and post-war societies in terms of environment, poverty, and security?

Like Percival's future research agenda, the second report by Rønnfeldt contains his recommendations for new research within the realm of environment, poverty, and conflict. Although both authors analyze the environment, poverty, and security linkage from a sustainable development perspective, Rønnfeldt takes a more direct policy approach in his section. The purpose of research is "to examine causes of conflicts and their interplay in order to assess which policy instruments are required and in what circumstances, so as to facilitate the design of efficient environmentally sustainable strategies" (p. 55).

Rønnfeldt begins with a working definition of each of the terms environment, poverty, and security and points out the interdisciplinary nature of their linkages. Each term has "traditionally been dealt with in three different academic disciplines—environment within natural science, poverty within development theory, and conflict within international politics" (p. 57). He reviews the tri-circle model and then provides a short literature review for four areas: poverty and conflict; conflict and environment; environment and poverty; and environment, poverty, and conflict. His most in-depth literature review is on environment and security as he clearly identifies this research area as the most abundant and robust and compares it to the relatively non-existent work in the environment, poverty, and conflict area. Additionally, the environment and conflict literature fertilizes the future work of the Norwegian program as it contains an ongoing debate of just where, how, and in what context environment and security reticulate. Rønnfeldt presents research compiled using seven Norwegian and international databases to help determine the scope of present research. He completes a comprehensive search in each of the four above areas to support numerically his claim that there is little research in the area of environment, poverty, and conflict.

Rønnfeldt uses Marc Levy's division of three waves of environmental security research to organize the literature.¹ The description of the first two waves of environment and security literature lays the foundation for the third wave. Homer-Dixon and the Toronto Group produce the major work and methodology of the second wave. Rønnfeldt incorporates his criticisms of the second wave into the elements he suggests for the third wave, which he states as follows: Add a poverty dimension to 'Environmental and Conflict Studies'; Identify the relative importance of factors in the causal pathway to conflict; Include null cases in the

analysis; Study cooperation in addition to conflict; Explore mechanisms of governance; and Focus on the regional level.

Woven through each of his recommendations is an emphasis on quantitative analysis and the policy implications of the environment, poverty, conflict field. Rønnfeldt stresses the need to apply quantitative methodologies to examine statistical correlations between environmental factors and conflict. As these factors are analyzed, the link between environment, poverty, and conflict may shift the focus of security to other political and economic factors. However, such shifts indicate Rønnfeldt's movement away from emphasizing strict causality between environmental degradation and conflict. Rather, he focuses on poverty as the important missing link in the previous logical frameworks. The analytical methods in turn should help policymakers prioritize among the causal factors, leading them to develop priority policy areas and "cost effective use of international assistance" (p. 72).

Rønnfeldt adds a section on governance that further speaks to his emphasis on research-supported policy initiatives. Governance incorporates the issue of political institutions and their effectiveness, but more importantly, it acts as "an intermediate variable between the independent variables poverty and environmental scarcity and the dependent variable conflict" (p. 78). According to Rønnfeldt, governance enables a transformative environment that could possibly move this discussion from environmental scarcity, poverty, and conflict to environmental sustainability, equity, and peace.

Most of Rønnfeldt's recommendations come together in the regional example of West Africa. He chooses West Africa because countries in the region are experiencing both conflict and cooperation, hence including the important null cases. Additionally, West Africa has regional structures in place which provide an opportunity to examine both governance and interstate cooperation. Rønnfeldt suggests three levels of analysis for his regional focus - the state in society, the systems level, and the regional level. He also cites other possible regions for analysis—Africa's Great Lakes region and Central America.

Rønnfeldt and Percival together provide a comprehensive review and point of departure as researchers embark on the third wave of environmental security work. Their recommended incorporation of poverty in the conflict equation moves the field more directly into the discussion of environmentally sustainable development.

¹ Levy, Marc, 1995. "Is the Environment a National Security Issue?" *International Security*, vol. 20, no. 2, pp. 35-62.

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worked with the ECSP in the summer of 1997.

**Population and Environment:
Rethinking the Debate**

by Lourdes Arizpe, M. Priscilla Stone
and David C. Major (editors)

Boulder, CO: Westview Press, 1994. 352 pp.

Reviewed by Mita Gibson

The debate over the interactions between human population processes and the environment can be traced as far back as 1789 when Thomas Malthus published his famous *Essay on the Principle of Population*. In recent years, the debate has been characterized by optimists such as Julian Simon who emphasize the importance of economic growth and technology as opposed to the more pessimistic view illustrated by Paul and Anne Ehrlich who focus on the need to reduce population growth whether through fertility reduction or control of migration. In *Population and Environment: Rethinking the Debate*, an interdisciplinary group of scholars examines the complex relationships between population and environment with special attention to the social, political and institutional context of these linkages.

Edited by Lourdes Arizpe, M. Priscilla Stone and David C. Major, the book is based on a collection of papers presented at a 1992 workshop held in Mexico and funded by the John D. and Catherine T. MacArthur Foundation. The authors conclude that there is rarely a direct link between environmental problems, human activities and population issues. They also emphasize the importance of analyzing population trends in relation to other processes, particularly micro-level data about social and economic factors. Although the authors hold different views about the dynamic relationship between population and environment, they share a common concern about the oversimplified nature of the debate.

The book is organized into three parts. Part one provides an overview of population and environment with an examination of world population trends and the gender and environment debate. This first section includes chapters by Arizpe and Margarita Velazquez, Wolfgang Lutz, Gita Sen, Bina Agarwal, and Alberto Palloni. Part two includes case studies and a review of the complexities inherent in population-environment relationships. The second section includes chapters by Richard Bilsborrow and Martha Geores, Peter Little, Marianne Schmink, Stephen Bunker and Bryan Roberts. Part three provides a summary of conclusions and suggestions for future research.

Although many of the issues covered in this book have been examined before, the authors provide a

wealth of information about the nature of population-environment linkages. The first two chapters are of particular interest from a development and foreign policy perspective. In the first chapter, Arizpe and Velazquez argue that the concept of population must be expanded to include social dimensions such as access to resources, livelihoods, gender and structures of power in addition to the usual demographic measures such as population size, density, and rate of increase. With respect to the linkages between conflict, population growth, and environmental degradation, Arizpe and Velazquez emphasize the importance of examining the social context such as the distribution of goods and services and the institutional context that governs access to critical resources, in addition to the usual population and environment indicators.

In the next chapter, Wolfgang Lutz focuses on world population trends and provides a valuable historical overview of population patterns in different regions. He outlines the determinants and basic characteristics of changing population patterns and asserts that population cannot be linked to environmental issues without considering intermediate behavioral and technological factors. Policy issues such as food security and conflict over resources are not simply the result of population growth or demographic factors but are also related to a range of socio-political, economic and institutional factors that are equally important.

The case studies included in part two illustrate the complex social relationships involved in population-environment linkages. There are two chapters with particular relevance for development and foreign policy. In "The Socioeconomic Matrix of Deforestation", Marianne Schmink presents a framework for analyzing deforestation with an emphasis on social dynamics such as conflict and cooperation as possible contributing factors. She examines case studies from Brazil and India and highlights the linkages between individual decisions about forest use, a changing market or policy environment, and conflict or cooperation among social groups.

The role of a changing market or policy environment is also examined by Stephen Bunker in a chapter on problems of population and environment in extractive economies. Bunker focuses on economies that extract natural resources for export and argues that an extractive economy can be a driving force for population growth and environmental degradation. As new lands are opened up for settlement or resource extraction, there is also potential for conflict between different classes such as peasant and rancher over access to the land and resources.

In addition to the chapters outlined above, this book contains valuable research on a range of population-environment issues focusing on the experiences and needs of local communities, particularly the experiences of women. Richard Bilsborrow and Martha

Geores present their study of population change and agricultural intensification in developing countries and conclude that it is difficult to demonstrate a convincing linkage between growing population pressure and changes in land use in developing countries. It is important to take a more holistic approach that examines the range of interrelationships between population and land use including increases in agricultural land area, the effect of outmigration and basic land use practices. In a chapter on urbanization and the environment, Bryan Roberts examines urban poverty and quality of life as well as the relationship between urbanization and environmental change. Roberts also takes a community-based approach and notes that urban poverty is not an inevitable result of population pressures but is also related to the political context and the lack of adequate urban planning

Since this volume was published in 1994, much has been written about the need to involve local people in the development process and respond to community-identified population and environment concerns. Many of the contributors to this book have continued to build on their research into the complex mediating factors involved in the relationships between population and environment. With its emphasis on the social, political and institutional context of population-environment dynamics, this book is an important resource for all those with an interest in the field.

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Biodiversity and Human Health

Francesca Grifo and Joshua Rosenthal (editors)
 Washington: Island Press, 1997. 379 pp.

Reviewed by Jessica Powers

"In the end, the most powerful contribution of biological diversity is as the fundamental library for the life sciences."
 -Thomas E. Lovejoy, Forward

Thomas Lovejoy's quote underscores the premise of this comprehensive volume, a follow-up to the two-day symposium sponsored by the National Institutes of Health, the National Science Foundation and the Smithsonian Institution in 1995. The contributors outline the many links between loss of species and human physiology and disease. The volume is divided into four sections covering: (1) the causes and consequences of biodiversity loss; (2) drug discovery from biological diversity; (3) biodiversity and traditional medicinal methods; and (4) developing strategies for the conservation and sustainable use of these crucial resources, including an agenda for the future.

Chapters, written by leading experts in various environmental and scientific fields, are unfettered by jargon and complement each other well. In the first section, Dr. Eric Chivian links global environmental degradation to the exponential growth of species extinction in recent years. The irreparable damage of unsustainable practices, particularly habitat destruction by humans, is identified as the greatest threat to ecological diversity. Robert Engleman and his colleagues connect population pressures to the loss of species and to the rise of infectious diseases.

Sections two and three review past and present drug discoveries as a direct result of species variety and the relationship between environmental change and human health problems. Without rich biodiversity, scientists will lack the wherewithal to counterattack the spread of infectious diseases. The authors present numerous examples of how both traditional medicinal practices and modern laboratories have culled remedies from biological sources. They also highlight major losses incurred by the science community as a result of anthropocentric, destructive human behavior.

Having cited the implications of biodiversity loss and demonstrated the necessity for continued use of medicines and remedies derived from diverse plant and animal species, the contributors in the final section explore the challenges of balancing development with conservation and sustainable practices. The authors offer specific solutions to these challenges, culminating in a recommendation found in the afterword. The authors advocate the establishment of a "National Council for the Protection of Biodiversity and Human Health," hoping to spur greater interaction, information exchanges and increased interest among physicians, scientists, non-governmental organizations and policymakers.

Overall the book is a practical guide on the salience of biodiversity with respect to pharmacology. Editors Francesca Grifo and Joshua Rosenthal have gathered an excellent multi-disciplinary group of scientists and scholars who provide a comprehensive and thoughtful analysis of the complicated interrelationship of environmental degradation, human population growth, species loss, disease and human health. Neither too pedantic nor oversimplified, this book serves as both a primer for policymakers and a general review for the scientific community.

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**The Endangered Atmosphere:
Preserving a Global Commons**

by Marvin S. Soroos

University of South Carolina Press, 1997. 339 pp.

Reviewed by Stacy D. VanDeveer and Alex Farrell

The Endangered Atmosphere fills important gaps in the literature on international environmental cooperation and environmental security: It surveys four major international efforts to protect the atmospheric commons from over-exploitation, focusing on regimes for the regulation of nuclear testing, European transboundary air pollution, ozone layer protection and climate change. It also includes chapters on international scientific cooperation, the atmosphere as a commons, and environmental security. As a broad survey of major international agreements and organizations (both political and scientific) involved in ongoing efforts to protect the atmosphere, the book accomplishes much, offering up a great deal of empirical information. For each case, Soroos chronicles the emergence of atmospheric protection onto the international agenda and the development, over time, of international institutions and organizations to address defined problems. In particular, the book's treatment of the nuclear test ban regime as an important example of international cooperation in pursuit of environmental security goals is interesting and well informed.

There are many specific features of the book worthy of praise. The second chapter, a brief primer on the science of the atmosphere, is not to be missed by students of international politics because an informed understanding of the physical environment is a prerequisite to understanding environmental policy. Chapter Nine, which discusses environmental policy as a security issue is quite interesting, although the views of critics of this approach are not aired sufficiently. In particular, Soroos' examination of strategies to enhance environmental securities (vis-à-vis the atmosphere) by addressing "threats" and "vulnerabilities" suggests potentially fruitful avenues of policy and research. Perhaps the most useful part of this section is the development of a variety of Prisoner's Dilemma models for different environmental problems, especially the asymmetric version used to describe transboundary air pollution. Importantly, the author notes that there are some limitations to generalizing from the regimes studied in the book, but he may not go far enough in this regard. For example, in the case of transboundary air pollution, upwind nations (i.e. nations which contribute to the pollution of others but do not receive pollution from others) are generally resistant to emissions reductions unless it is shown that these emissions also have important impacts domestically. The broader implication is that international environmental policy will be difficult unless all (or many)

nations feel that they stand to benefit.

The section on the atmosphere as a commons (Chapter Eight) presents a useful conceptual framework for understanding the problematique of managing the atmosphere, although it could be expanded, as suggested below. This chapter serves as a well-organized introduction to commons management debates. Soroos presentation of the complexities of the atmosphere as a "commons" – given that much of it lies within the national jurisdiction of sovereign states – illuminates many of the tremendous difficulties in managing such a resource with diverse human uses.

One particularly stark oversight of *The Endangered Atmosphere* is the lack of analysis directed at the international scientific information, cooperation and organizations Soroos posits as so important for political cooperation. At the international level, "science" and "policy-making" are rarely as separate as Soroos' treatment of them. Little or no attention is paid to the importance of scientific language and the ways in which scientists "frame" environmental and/or policy questions. For example, despite having an international appearance, virtually all of the analysis used to support LRTAP was performed in Austria, Norway or the Netherlands — nations which pushed for international environmental protection. A discussion of the causes and implications of this situation would be very illuminating, and potentially important when considering LRTAP as an example for international environmental policy development. Nor does the book probe the very asymmetric access and participation of states in "international science" or the ramifications of such asymmetries for negotiation, trust and institutional credibility and effectiveness. In none of the four cases discussed, for example, is data gathering, analysis and distribution unproblematic. Where are the heated scientific debates on these issues? Surely they can matter for policy development. What about the importance of values as imbedded in varying perceptions of risk, credible evidence and the role of science in public policy? For example, states (and societies) can and do disagree on the credibility of scientific "findings." They may be skeptical of science done in another country or paid for by someone else. This unproblematic treatment of science leaves readers with an overly simple view of scientific and technical involvement in international relations, suggesting a much more linear process of policy development than most scholarship on the science-policy relationship have found.

Also surprising is a virtual absence of discussion on the European Union (EU). For the transboundary air pollution case the book focuses on the 1979 UNECE Convention and its follow-on Protocols (LRTAP) to the exclusion of virtually any EU policy, even though EU Directives currently have greater, and growing, importance compared to LRTAP. The discussion on

transboundary air pollution is limited in that it focuses almost exclusively on policies related to the ecological effects of acidification, with a brief mention of ground-level ozone. This focus may well be due to the attention that political scientists have traditionally paid to the acid rain issue, but it contrasts with the current scientific view that the atmospheric pollution is a multi-pollutant, multi-effects problem in which acidification, ground level ozone, eutrophication of water bodies, airborne particles, and global climate change are all inextricably linked. This view may strengthen the argument for a Law of the Atmosphere found at the end of the book, and deserves further study.

Most importantly, and the reader could easily become confused by the emphasis on international negotiations and treaties and think that these are key drivers of transboundary air pollution policy. Soroos focuses almost all of the discussion on transboundary air pollution on LRTAP and in some places (pp. 144, 265, 274) he explicitly claims that LRTAP has "measurable positive effects in mitigating the problems they were created to address." Confusion emerges when he admits elsewhere (pp. 141-144 and 275) that LRTAP Protocols did not directly result in emission reductions beyond what would have occurred regardless. The book only briefly mentions domestic issues or market conditions, arguably the primary forces shaping air pollution emissions. Indeed, a close examination of the evidences shows that nations which ratified the LRTAP Protocols were headed for emissions reductions already, due to changes in domestic policies or expected shifts in energy markets and thus ratification was essentially costless. Other nations participating in the negotiations, such as the United States and Poland, simply refuse to ratify most LRTAP protocols. Lastly, Soroos claims that there are important indirect effects of LRTAP, including the development of international institutions for air pollution research and monitoring and the development of domestic support for environmental policies in various countries. However, he does not analyze national-level research and monitoring, or the reasons for domestic support for environmental policies, and thus cannot test these hypotheses. The claims of indirect effects of LRTAP thus remain speculative.

Given the criticisms outlined above, *The Endangered Atmosphere*, contains a rich description of some important international environmental policy problems, draws valuable lessons from them, and presents some thought-provoking ideas for future research and policy. It presents a thoughtful summary of international relations research on the topic of protection of the atmosphere and is recommended for readers seeking such a treatment. However, the book's international relations focus highlights the need for more complete comparative research of national (and where appropriate, sub-national) level science and policy efforts related to in-

ternational environmental policy.

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The New Geopolitics of Energy

by John V. Mitchell with Peter Beck and Michael Grubb
Royal Institute of International Affairs, 1996. 120 pp.

Reviewed by Paul Runci

Over the past fifteen years, the geopolitics of energy has undergone a transformation that appeared all but impossible in the early 1980s. At that time, the world's energy situation was largely a function of political relations between major exporters in the Middle East and major importers such as the United States, Japan, and Europe; the tensions inherent in those relationships were reflected in close government regulation and control of the energy industries in most countries. Moreover, the 'old' geopolitics of energy took place in the larger context of the Cold War, which overlaid its own tensions on the global game of energy supply and demand.

John Mitchell's *The New Geopolitics of Energy* shows how the geopolitical situation has shifted from one driven by OPEC-OECD relations and state management to one that is more market-oriented, diversified, and influenced by political issues and policies that lie beyond the pale of strategic considerations traditionally associated with energy. The global climate change issue is perhaps the best example of the new cast of issues affecting the evolution of energy geopolitics, which has become intertwined, for example, with debates over North-South equity and atmospheric science. On the supply side, major political changes of the past decade such as the end of the Cold War have helped to expand and diversify the world's oil and gas reserves by opening many promising areas in the former Soviet Union to private exploration and production. As Mitchell and his colleagues describe, developments such as these, combined with growing demand in East Asia, suggest that the world energy landscape is dramatically different—and in many respects brighter—than ever before.

What is surprising about *The New Geopolitics of Energy* is not what it includes in its discussion of geopolitical change, but rather what it omits. It would seem, for instance, that any discussion of energy and geopolitical change would have to devote significant space to the revolutionary role played by recent technological advances. Three-dimensional seismic explo-

ration, slant drilling, tertiary and deep offshore recovery techniques have made it possible and economical to produce oil and gas resources in areas where this was not feasible before. At the same time, high-efficiency gas turbines have broken the “natural monopoly” of the electric utility industry generating brisk inter-fuel competition and rethinking of the energy regulatory framework. The technological and regulatory developments that are now unfolding have major, if currently uncertain, implications for the future geopolitics of energy. The book also devotes surprisingly little attention to demand-side trends and to political developments in key regions such as Latin America that have altered the geopolitics of energy in significant ways. Examples include the privatization of national assets and the easing of restrictions on foreign investment. Finally, the authors’ failure to include an index in the volume is a minor, yet unnecessary, frustration.

In short, *The New Geopolitics of Energy* attempts to provide an account of the dramatic currents of change and driving forces that are reshaping the world’s energy situation. Unfortunately, the book misses some of the most important drivers of change and feels arbitrarily and hastily assembled.

Paul Runci is currently a doctoral candidate in government and politics and a research fellow with the University of Maryland’s Harrison Program on the Future Global Agenda. He is on leave from the Pacific Northwest National Laboratory.

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**Thinking Ecologically:
The Next Generation of Environmental Policy**
Marian R. Chertow and Daniel C. Esty, eds.
Yale University Press, 1997. 271pp.

Reviewed by Melissa Brown

Thinking Ecologically is the result of a series of topic-specific workshops on a wide range of environmental policy issues. The participants included representatives from business management, domestic and international politics, industrial technology, multilateral investment agencies, health care, shipping, non-governmental organizations, utility companies, and academia.

The premise of the workshops and the book is the need for revitalizing environmental policy. In the introduction, the editors outline the methodology and progress of the ‘first generation’ of environmental policy in the United States, that extends from 1970 to the present. The chapters highlight the prevalent themes that emerged in the workshops.

Overall, *Thinking Ecologically* suggests a need for an integrated policy approach that considers the impact of environmental policy on other sectors as well as the impact of media specific environmental policies. Throughout the text there is a prevalent call for a blend of policy and process wherein the next generation of environmental policy is adaptive, multi-sectoral and non-stationary.

The essays in section one—“*Foundation for the Next Generation*”—examine the successes and failures of today’s environmental policies and supply potential approaches that policymakers might consider for improving the next generation.

In “Industrial Ecology; Overcoming Policy Fragmentation” Charles W. Powers and Marian R. Chertow set the tone for the book. The authors explore the concept of industrial ecology as a means of reinventing environmental policy. Industrial ecology is explained as a systems approach of integrating science into the policy cycle. By basing distinct but cooperative regulations on the variables that create the varied range of environmental issues, the next generation of environmental policy will be more coherent and effective.

In “Land Use: The Forgotten Agenda” John Turner and Jason Rylander consider the linkages between land use questions and economic, social and environmental issues in the United States. The chapter illustrates the predominant theme in U.S. development – expansion. The authors point out that regulatory topics such as pollution and species protection are dealt with individually, rather than as parts of a system, the core of which is land. In addition, some legislation, even “environmental” legislation such as “Superfund” laws to clean up contaminated sites, has had inadvertent economic consequences that provide incentives for further development rather than land-use efficiency. For the next generation of policy, the authors suggest strategies that address the cumulative effects of land use planning. They advocate “systems thinking,” community engagement, education, partnership among the government, NGOs and industry, environmental justice, integration wilderness protection and rejuvenated spirituality as means of attaining comprehensive land use policies.

Elizabeth Dowdesville and Steve Charnovitz examine the correlation of ecological and environmental consequences in “Globalization, Trade and Interdependence.” They consider the relationships between national and global environmental policy; current and historical issues of trade and the environment; and international investment as a facilitator for environmental improvement. The chapter illustrates the need and the potential for better enabling international environmental policymaking institutions to address global environmental issues comprehensively. The authors advocate larger roles for NGOs in international development policy. They advise that the next generation

of international environmental policy must incorporate economics and development, while environmental issues should be further integrated into trade blocks and treaties. They assert that politically, economically and environmentally, international cooperation is necessary for national sovereignty, and therefore it is necessary to advance the next generation of environmental policy on a global, multi-sectoral level.

In section two, "Tools and Strategies for the Next Generation," the essays consider current issues as situations, trends and harbingers. In "Privately Financed Sustainable Development," Stephan Schmidheiny and Bradford Gentry discuss the international trend away from development aid and toward private investment, as a means of fostering sustainable development. Private capital increasingly comprises the majority of international financial income for many developing countries. In addition, international investors are demonstrating a preference for projects marketed as "sustainable." The authors recommend that governments of recipient and investor countries work with investors and multinational corporations to integrate environmental and social initiatives into development. They assert that as a major investor and a significant recipient of private capital investment, the United States must build sustainability into its development policy, both domestically and abroad.

E. Donald Elliot explicates in "Toward Ecological Law and Policy" the premise that environmental policy too often ignores the interconnectedness intrinsic to the environment. Elliot stipulates that federal laws often do not account for local conditions and variables and simultaneously restrict the power of local authorities. The chapter describes the "command and control" system as a central government commanding the acceptable level of pollution, and then controlling the means of attaining that level. Elliot proposes a system of "command and covenant" where the federal government sets the standards, but decentralized authorities achieve compliance through locally appropriate methods. He suggests that the next generation of environmental policy should mirror nature by building on successful techniques and developing systemic "bubbles" where national policy is implemented through decentralized bodies. The strategies recommended in this chapter include economic incentives; improved environmental information programs; private programs; and structural changes to environmental programs.

The third section, "Extending the Reach of Next-Generation Policy," takes environmental policy to a new level by highlighting ideal policy and technology initiatives. These ideas are, for the most part, not likely options for the present.

In "Coexisting with the Car," Emil Frankel discusses existing realistic and successful programs of privately maintained toll roads and high occupancy vehicle lanes. He outlines a logical blueprint for trans-

portation system improvements such as incentives for public transportation and carpooling, automobile technology innovation, and increased personal car taxes. However, it has proven extraordinarily difficult in the United States to innovate in the transportation, energy, and agriculture sectors. The other topics covered in this final section may be useful for generating goals, rather than facilitating applications.

In the final chapter, "A Vision for the Future," Esty and Chertow address the realism of the included essays. Esty and Chertow acknowledge that *Thinking Ecologically* is a set of diverse, strong suppositions and theories that may even contradict each other. However, this volume is not intended to be a book of answers. It is a tool for initiating discussions, and possibly reforms, in the next generation of environmental policy. *A Vision for the Future* is filled with images of an environmentally utopian world where the ideals of each author are realized. These are goals to strive for, but not to expect—"our vision is deliberately optimistic, and by no means the most likely."

Melissa Brown recently completed her Master of Science in Resource Management and Administration at Antioch New England Graduate School.

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by Arthur H. Westing

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*The Laws of the War and
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*La protection de l'environnement en periode de conflit
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Land Mines: Dealing With the Environmental Impact
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*Nuclear Weapons Tests, Arms Control,
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The 1995 World Court Case and Beyond*
by Nico J. Schrijver

Update on the Task Force on State Failure

Over the last four years, the Central Intelligence Agency's Task Force on State Failure has been conducting an empirical effort to identify factors associated with state failure by examining a broad range of demographic, societal, economic, environmental, and political variables. The project design, selection of variables and interpretation of results has been pursued by three teams of academic consultants led by Daniel C. Esty (School of Forestry and Environmental Studies, Yale University), Jack Goldstone (Department of Sociology, University of California at Davis), and Ted Robert Gurr (Department of Government and Politics, University of Maryland).

Before entering its second phase of study, the three scholars shared their preliminary findings at a May 1996 meeting at the Wilson Center. Thomas F. Homer-Dixon of the University of Toronto was the commentator for the session. During their presentations, the researchers emphasized that their preliminary findings do not represent the official view of the U.S. government or the Intelligence Community. The Task Force identified more than 100 serious political crises, or state failures, between 1955 and 1994 that posed security and stability threats. These crises took the forms of ethnic and revolutionary war, overthrow and collapse of regimes, and genocide or politicide. Effects of about 75 possible independent variables on state failure were examined—including demographic, social, economic, environmental and political variables. 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.

Quality of Life

Low levels of "quality of life" indicators—including high infant mortality, low nutrition, low per capita incomes, low access to safe drinking water, etc.—were strongly correlated with higher risks of state failure. Among a dozen such variables, the level of infant mortality was found to be the best proxy for overall quality of life as it related to risks of state failure.

Openness to International Trade

Countries that had a higher volume of international trade relative to GDP had a lower risk of state failure. Higher and more open trade is associated with greater stability.

Level of Democracy

Democratic countries were generally less likely to experience state failure. However, the effect of democracy was strongly significant *only* when combined with the other clusters of variables. Non-democratic regimes were more vulnerable if they were not relatively open to international trade. But for democratic regimes quality of life variables had much stronger effects; indeed, democratic countries experiencing low quality of life indicators had especially high risks of state failure.

There were wide disparities in the quality and availability of data available to the researchers, with notable deficiencies in the environmental data. The researchers were careful to note that the study has thus far identified factors associated with state failures but its models do not establish cause and effect relationships. The study suggests avenues for additional research and analysis examining political state instability and concludes that Task Force work should be augmented with intelligence information before making judgments about the prospects for states to fail.

In March 1998, the Environmental Change and Security Project hosted another follow-up meeting on the Task Force, again with Esty, Goldstone, and Gurr as well as Barbara Harff of the U.S. Naval Academy and Marc Levy of Williams College. The scholars presented their findings from the conclusion of phase II and the specific environmental conclusions are: (1) Environmental variables indirectly affect the probability of state failure; (2) Environmental stresses, in connection with underlying environmental vulnerability and state capacity, help to explain variations in quality of life which, in turn, affects the probability of state failure; (3) A mediated model provides a mechanism for folding environmental variables into state failure analysis; (4) Data gaps, especially weak measures of vulnerability and capacity, limit the ability to analyze the connection between environmental variables and state failure; (5) Vulnerability and capacity have a stronger impact on infant mortality than environmental stress; and (6) After adjusting for vulnerability and capacity, environmental factors are statistically significant.

Phase II also included work on three other issue areas: (1) Tracking accelerators to conflict, (2) More sophisticated analysis of autocracies, partial democracies and full democracies and their likelihood to experience state failure, and (3) Testing numerous hypotheses with additional datasets designed to improve the quality and quantity of data.

The final version of the State Failure Task Force's Phase II Report has not been printed as this Report went to press. However, the Environmental Change and Security Project has agreed to compile a list of those readers who are interested in attaining a copy of the Phase II results once they are available. Please refer such requests to Michael Vaden at vadenmic@wwic.si.edu. Look for a full summary of the March 1998 meeting in next year's *ECSP Report Issue 5* and on the Project's website at <http://ecsp.si.edu>.

Bibliographic Guide to the Literature

The following bibliography is a compilation of all entries from the three previous Environmental Change and Security Project Reports and new additions from the last year. The Guide includes a wide range of publications, organized by theme, which relate to the various conceptions of environmental security. The sections are:

- A. *Environment and Security: General Debate & Definitions;*
- B. *Redefining Security: Articles Mentioning the Environment;*
- C. *Environment as a Security Threat to a Nation's Health, Economy or Quality of Life*
- D. *Environment as a Contributing Factor to Political Instability and/or Violent Conflict*
- E. *The Intelligence Community and the Environment*
- F. *Environmental Effects of War and Preparations for War*
- G. *Official U.S. Statements Relating Environment to Security Issues or Security Institutions*
- H. *Population, Environment and Security*
- I. *Environmental Security and Migration*

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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Nongovernmental Activities

This UPDATE SECTION is designed to highlight the environment, population, and security activities of foundations, nongovernmental organizations, academic programs, and government offices. Listed below are organizations **not included** in previous Environmental Change and Security Project Reports. For descriptions of organizations listed in Issues 1, 2 and 3 of the ECSP Report, please visit our new web site at <http://ecsp.si.edu>. Prior listings appear below at the end of each section. Please refer to the web sites found 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 Michael Vaden at vadenmic@wvic.si.edu.

Foundations

ROCKEFELLER FOUNDATION

The Rockefeller Foundation is a grant-making and research institution which is organized around nine core areas: African Initiatives, which build on human capacity and institutional infrastructure in Africa; Agricultural Sciences, which seek to increase crop yields of smallholder farmers in developing countries without degrading natural resources; Arts and Humanities, which seek to understand and engage difference in changing societies through the arts; Health Sciences, which seek to build human capacity for population-based health care in developing nations; Equal Opportunity / School Reform, which seeks to create jobs and community support for people to join the mainstream economy; Global Environment, which builds on international leadership capacity to initiate and carry out innovative approaches to sustainable development and which facilitates the transition to a new energy paradigm based on sustainability; and Population Sciences, which mobilize resources to satisfy unmet demand for family planning. The Foundation has just published a new book, *High Stakes: The United States, Global Population and Our Common Future*. For information, contact: Rockefeller Foundation, Global Environment Division, 420 Fifth Avenue, New York, NY 10018. Tel: 212-852-8365; Internet: <http://www.rockfound.org>.

Nongovernmental Organizations

ASPEN INSTITUTE

The Aspen Institute is an international nonprofit educational institution dedicated to enhancing the quality of leadership through informed dialogue. The Institute's International Peace and Security Program is composed of a series of international conferences designed to suggest strategies to promote peace and security in the face of the principal threats and sources of tension that will characterize the first decades after the end of the Cold War. Publications and conference reports are widely disseminated. International poverty and development were the subject of the Program's fourth conference, held in December 1997. The Institute also has a Program on Energy, the Environment, and the Economy which attempts to build consensus in the areas of energy and environmental policies through meetings which bring private and public sector actors together in a nonadversarial setting. The Program has several forums covering energy policy, the environment in the 21st century, valuing environmental performance, workshops on the Pacific Rim, and Central and Eastern Europe. For information, contact: Susan Sechler, The Aspen Institute, Suite 1070, 1333 New Hampshire Avenue, NW, Washington, DC 20036. Tel: 202-736-5800; Fax: 202-467-0790; E-mail: dave.austin@aspennst.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 Avenue, 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 will identify 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 will examine 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 information, contact: P.J. Simmons, Director, Managing Global Issues Project, Carnegie Endowment for International Peace, 1779 Massachusetts Avenue, NW, Washington, DC 20036. Tel: 202-939-2259; Fax: 202-483-4462; E-Mail: pjsimmons@ceip.org; Internet: <http://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 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 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 in conservation, environmental protection, 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 PUBLIC ENVIRONMENTAL OVERSIGHT

The Center for Public Environmental Oversight (CPEO), formerly known as CAREER/PRO, is a project of San Francisco State University's San Francisco Urban Institute. It helps communities that host or have hosted U.S. military installations address the legacy of military environmental degradation. CPEO operates a widely-used Internet newsgroup, holds training workshops for members of Restoration Advisory Boards, and consults with citizens and community groups both within the United States and abroad. Project staff participate in numerous advisory committees dealing with military base cleanup. CPEO publishes the newsletter, *Citizens' Report on the Military and the Environment*, which is available free of charge. In September 1995, it published the *Military Contamination and Cleanup Atlas for the United States 1995*, mapping and listing military contamination in all U.S. states and territories. For information, contact: SFSU Center for Public Environmental Oversight, 425 Market Street, Suite 705, San Francisco, CA 94015. Tel: 415-904-7750; Fax: 415-904-7765; E-mail: aimeeh@igc.apc.org.

EVIDENCE BASED RESEARCH

Evidence Based Research (EBR) is a for-profit research, analysis, and development firm specializing in making science and practical knowledge available to support decision makers in government and private industry. EBR has several program areas including Environmental Security, International Studies and Analysis, Military Studies, and the Communications Planning and Evaluation Laboratory (COMPEL). EBR analyzes the relationship

between the environment (freshwater, arable land, climate change, etc.) and the security of states. EBR has provided support to the Department of Defense, the NATO CCMS pilot study, "Environment and Security in an International Context," and the development of regional strategies for the Asia-Pacific, Western Hemisphere, and U.S. European Commands. For information, contact: Evidence Based Research, Inc., 1595 Springhill Road, Suite 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 Long-Term Global Food Project examines the prospects for satisfying the future global demand for food and publishes a quarterly newsletter entitled *Perspectives on the Long-Term Global Food Situation*. 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 more information, contact: Dr. Barbara Rosenberg, ProMED Mail Steering Committee and FAS Coordinator, E-mail: bhrosenb@purvid.purchase.edu; Internet: <http://www.fas.org>.

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. 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 WATER PARTNERSHIP

The Global Water Partnership (GWP) was established in 1996 and is a network of government water departments, NGOs, multilateral banks, professional associations, UN agencies, the private sector, and academic institutions which share the vision of water management and development articulated in 1992 in Dublin and Rio. GWP initiatives are based on Dublin-Rio principles 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; encouraging governments and other stakeholders to adopt consistent policies; building 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. In support of these initiatives, GWP sponsors publications and meetings on water resources. For example, following the World Food Security Summit in 1996, GWP's Technical Advisory Committee-ASEAN Region, convened an international conference in Manila entitled "Water and Food Security: Some Thoughts on Strategy and Practical Actions Following the Summit." For information, contact: GWP Secretariat, c/o SIDA, S-105 25 Stockholm, Sweden. Phone: 46-8-698-50-00; Fax: 46-8-698-56-27; E-mail: gwp@sida.se; Internet: <http://www.gwp.sida.se/>.

HARVARD CENTER FOR POPULATION AND DEVELOPMENT STUDIES

The Harvard Center for Population and Development Studies aims to advance understanding of world population issues through collaborative research, publications, and seminars. The Center sponsors the David E. Bell Fellowships which were created to support the development of young leaders for careers in population and development. The Center's research groups focus on several themes including, Health, Population, and Development; Human Security, a program which explores concepts of security through research on ethics and international policy, human survival crises during humanitarian emergencies, environmental security and new diseases, and population and security; Burden of Disease; and Gender and Population Policy. The Center also co-sponsors the Common Security Forum which is a mix of academic research and policy forums on a wide range

of topics including arms control, economic security and social transition, human security, and crisis survival. 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@hsphsun2.harvard.edu; Internet: <http://www.harvard.edu>.

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, Suite 100, 1616 P Street, NW, Washington, DC 20036. Tel: 202-328-5117; Fax: 202-328-5133; E-mail: Schrader@rff.org; Internet: <http://www.agritrade.org>.

INSTITUTE FOR SUSTAINABLE COMMUNITIES

The mission of the Institute for Sustainable Communities is to promote environmental protection, sustainable economies, and participatory decision making at the community level in Central and Eastern Europe and Eurasia through training, technical assistance, and demonstration projects. For information, contact: George Hamilton, Executive Director, Institute for Sustainable Communities, 56 College Street, Montpelier, VT 05602. Tel: 802-229-2900; Fax: 802-229-2919; E-mail: isc@iscvt.org.

OVERSEAS DEVELOPMENT INSTITUTE

The Overseas Development Institute (ODI) is a British think tank focusing on international development and humanitarian issues. ODI has three policy research groups: Natural Resources, International Economic Development, and Human Security and Development. The Natural Resources program deals with agricultural institutions and technology change, environmental economics and policy, seeds and biodiversity, and forestry. The Human Security and Development area incorporates food security and food aid, natural disasters, poverty and public action, and humanitarian policy. ODI has a wide range of publications including books, development policy studies, working papers, and two quarterly journals: *Development Policy Review*, and *Disasters: The Journal of Disaster Study, Policy and Management*. ODI also holds regular discussion meetings, workshops, and seminars on development topics and maintains the Relief and Rehabilitation Network which facilitates an exchange of operational information among international relief agency personnel. For information, contact: Overseas Development Institute, Portland House, Stag Place, London SW1E 5DP, U.K.. Tel: 44-0-171-393-1600; Fax: 44-0-171-393-1699; E-mail: odi@odi.org.uk; Internet: <http://www.oneworld.org/odi/>.

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. 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 Street, NW, Washington, DC 20036; Phone: 202-328-5000; Fax 202-939-3460; Internet: <http://www.rff.org>.

ROCKY MOUNTAIN INSTITUTE

The Rocky Mountain Institute is an independent, nonprofit research and educational foundation which seeks 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 Road, Snowmass, CO 81654-9199. Tel: 970-927-3851;

Fax: 970-927-3420; E-mail: outreach@rmi.org; Internet: <http://www.rmi.org>.

UNIVERSITY OF MICHIGAN, POPULATION-ENVIRONMENT FELLOWS PROGRAM

The Population-Environment Fellows Program (PEFP) provides fellowships for individuals who have completed graduate degrees in areas related to population and environment. PEFP is administered at the University of Michigan and funded by the United States Agency for International Development. Fellows are expected to provide technical assistance to the agency which requests their placement in areas which encompass both population and environment issues; research activities, if any, must be applied. To be eligible for a fellowship, applicants must have completed a graduate degree program in a relevant field of study and be a U.S. citizen or permanent resident. Another related program at the University of Michigan is the Population Fellows Program, also funded by USAID, which offers two-year post-degree Fellowships in population-related fields for recent graduates and population professionals. Fellows are individually placed in developing countries with population and family planning organizations or in international agencies involved in population and family planning. Past placements have included: The Population Council, Pathfinder International, CARE, local Ministries of Health, the World Health Organization, USAID, UNFPA, and the State Department. A graduate degree in population or a related field is required. Opportunities also exist for professionals with a background in both population and environmental studies. Candidates must be U.S. citizens or permanent residents. The Environmental Change and Security Project works closely with The University of Michigan Population Fellows Program as a subcontractor. For information, contact: The Population-Environment Fellows Program, University of Michigan, Room M2240, School of Public Health II, Ann Arbor, MI 48109-2029. Tel: 734-747-0222; Fax: 734-747-4947; E-Mail: Popenv@SPH.umich.edu.

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>.

Previous Listings of Nongovernmental Activities

Foundations

The John D. and Catherine T. MacArthur Foundation, Program on Peace and International Cooperation
The Pew Charitable Trusts' Global Stewardship Initiative
The Rockefeller Brothers Fund, Programs on "One World: Sustainable Resource Use" and
"One World World Security"
W. Alton Jones Foundation, Sustainable World & Secure World Programs

Nongovernmental Organizations

American Meteorological Society
The Cambridge Global Security Programme, Cambridge University
The Canadian Global Change Program Research Panel
CAREER/PRO
The Center for Defense Information
The Center for Economic Conversion
The Center for Environmental Security, Pacific Northwest National Laboratory
The Center for Security Policy
The Climate Institute
Consortium for International Earth Science Information Network
Cornell Program on Environmental Conflict Management
Earth Science Research and the Challenges of Environmental Security, Space Policy Institute,
The George Washington University

Previous Listings of Nongovernmental Activities, continued

Ecologic – Centre for International and European Environmental Research
Ecologically Sustainable Development, Inc.
Environment and Conflicts Project, Swiss Peace Foundation (Berne)/
Center for Security Policy and Conflict Research at the Swiss Federal Institute of Technology, Zurich
Environmental and Energy Studies Institute
Environment and Security Project, Institute of War and Peace Studies, Columbia University
The Fridtjof Nansen Institute
Governance and Security Programme
The Global Environmental Change and Human Security Project (GECHS)
Global Environment Forum, Institute for International Studies, Stanford University
Global Green USA Legacy Program/Green Cross International
Global Survival Network (formerly the Global Security Network/Russian Marine Mammal Council)
Harvard Center for Population and Development Studies
International Clearinghouse on the Military and the Environment
The Institute for Foreign Policy Analysis, Inc.
Institute for Research and Information on Peace and Security (GRIP) [Institut de Recherche et d'Information
sur la Paix et la Securite]
The International Institute for Environmental Strategies and Security and the Groupe d'Etudes et de
Recherches sur les Politiques Environnementales
Environment and Security
International Institute for Sustainable Development
International Peace Research Institute, Oslo
IUCN: The World Conservation Union
Military Toxics Project
Monitoring Commonwealth of Independent States Environmental Developments,
Monterey Institute of International Studies
The Nautilus Institute for Security and Sustainable Development
Natural Resources Defense Council
National Wildlife Federation
Pacific Institute for Studies in Development, Environment, and Security
Project on Environmental Scarcities, State Capacity, and Civil Violence
Population Action International
Population Reference Bureau
Stockholm International Peace Research Institute
Tampere Peace Research Institute
Trade and Environment Database Project
The 2050 Project
Worldwatch Institute

Find the descriptions of these organizations in past issues of the *ECSP Report* or on our website at
<http://ecsp.si.edu>

Governmental Activities

ARMY ENVIRONMENTAL POLICY INSTITUTE

The Army Environmental Policy Institute's (AEPI) mission is to assist the Army Secretariat in developing forward-looking policies and strategies to address environmental challenges which may have future impacts on the Army. AEPI is tasked with anticipating environmental trends and monitoring environmental legislation; assessing and analyzing future environmental challenges, problems, and opportunities for Army military programs; providing policy guidance on Army environmental investments strategy and systemic environmental problems; remaining abreast of current and emerging environmental technology; providing for broad-based academic involvement in the Army Environmental Program; providing fellowships for Army environmental research. AEPI also hosts conferences and symposia to facilitate expanded interaction with academia, industry, and other interested parties and improved understanding of the Army's environmental policy. In May 1997, AEPI published a study entitled, "Considerations for the Development of a DoD Environmental Policy for Operations Other Than War." The study represents the final phase of an environmental policy development project at AEPI; it identifies key policy issues, and provides specific recommendations for future policy development. AEPI also publishes an Annual Report on the Institute's initiatives. For information, contact: Director, AEPI, 430 Tenth Street NW, Suite S-206, Atlanta, GA 30318-5768. Tel: 404-892-3099; E-mail: webmaster@aepi.army.mil; Internet: <http://www.aepi.army.mil/>.

DEPARTMENT OF DEFENSE / ARCTIC MILITARY ENVIRONMENTAL COOPERATION PROGRAM

The Arctic Military Environmental Cooperation (AMEC) Program is a forum for dialogue and joint activities among U.S., Russian, and Norwegian military and environmental officials to ensure that the militaries of the respective nations do their part to help assess, preserve, and repair the Arctic environment. It addresses Arctic environmental issues that are related to the militaries' unique capabilities and activities. Currently, six projects fall under the AMEC, including four radioactive waste projects and projects dealing with military base cleanup and the treatment of shipboard wastes. For information, contact: Michael McNerney, Office of the Deputy Under Secretary of Defense for Environmental Security, Phone: 703-695-3321; Fax: 703-693-0493; E-mail: mcnernmj@acq.osd.mil; Internet: <http://www.acq.osd.mil/ens/>.

DIRECTOR OF CENTRAL INTELLIGENCE/DCI ENVIRONMENTAL CENTER

The DCI Environmental Center, created in Spring 1997, was established 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. 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. In November 1997, the Center sponsored a two and one half day workshop to explore the political, economic, and social consequences of environmental stress. Such assessments will be a long-term, ongoing focus of the Center.

NATO SCIENCE PROGRAMME

The NATO Science Programme has designated environmental security as a priority area to facilitate East-West collaboration on scientific and technical aspects of innovative and promising projects related to environment and security issues, including the reclamation of contaminated military sites, regional environmental problems, and natural and man-made disasters. Particular emphasis is placed on low-cost technologies addressing significant environmental problems. The Programme funds a variety of related activities through several workshop funds, study institutes, and grants which are intended to support interaction among scientists working on common problems, rather than research itself. For information, contact L. Veiga da Cunha, Scientific Affairs Division, NATO, B-1110 Brussels, Belgium. Tel: 32-2-707-5096; Fax: 32-2-707-4232; Web Site: <http://www.nato.int/science/scope/es.htm>.

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

DEPARTMENT OF AGRICULTURE / OFFICE OF THE NATIONAL FOOD SECURITY COORDINATOR

The Office of the National Food Security Coordinator organizes the U.S. government efforts on food security and acts as secretary of the Interagency Working Group on Food Security (IWG). The IWG was established in preparation for the World Food Summit in Rome in 1996 and is co-chaired by the Department of State, the Department of Agriculture, and the U.S. Agency for International Development. It includes representation

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. For 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 for an additional perspective on USAID/PHN efforts.

from those organizations, the Office of the Vice President, the National Security Council, the Office of the U.S. Trade Representative, the Office of Management and Budget, the Departments of Defense, Commerce, Treasury, and Health and Human Services, the Central Intelligence Agency, the Office of Science and Technology, the

Environmental Protection Agency, the National Intelligence Council, and the Peace Corps. Since the Summit, the United States has formalized its commitments to global and domestic food security, making the USDA the lead agency for an intergovernmental effort to reach the food security goals for the next century that were agreed to at the Summit. The IWG recently established a Food Security Advisory Committee of interested non-governmental groups and individuals to advise the Working Group in the process of drafting a national Action Plan on food security which will be released in 1998. For information, contact: Office of the National Food Security Coordinator, room 3016S, USDA, Foreign Agriculture Service, 14th and Independence Avenue, SW, Washington, DC 20250. Tel: 202-690-0855; Fax: 202-720-6103; E-Mail: guroff@fas.usda.gov; Web Site: <http://www.fas.usda.gov/icd/summit/summit.html>.

Previous Listings of Governmental Activities

The Centers for Disease Control and Prevention
Department of Agriculture/Natural Resources Conservation Service/International Conservation Division
Department of Commerce/National Oceanic and Atmospheric Administration,
Office of Global Programs
Department of Commerce/National Oceanic and Atmospheric Administration,
Office of International Activities
Department of Defense/Environmental Security/International Activities
Department of Energy
Department of State/Bureau of Intelligence & Research
Department of State/Bureau of Oceans and International Environmental & Scientific Affairs
Environmental Protection Agency/Office of International Activities
Environmental Protection Agency/The INFOTERRA Network/USA National Focal Point
The Intelligence Community (IC)
Office of Science & Technology Policy/National Security & International Affairs
U.S. Geological Survey

Academic and Professional Meetings

18-19 APRIL 1996: DUTCH NATIONAL RESEARCH PROGRAMME ON GLOBAL AIR POLLUTION AND CLIMATE CHANGE
“Environmental Security and Sustainable Development”

This workshop was organized by the Dutch National Research Programme on Climate Change and Global Air Pollution (NRP), the Netherlands HDP Committee, and the Netherlands Organisation for Scientific Research (NWO). The workshop targeted experts and researchers with relevant experience in the understanding of environmental security and societal impacts of global environmental change, as well as policymakers concerned with this issue. The complete proceedings of this workshop were published in NRP Report # 410 200 003. For more information, contact: NRP Programme Office, PO Box 1, 3720 BA Bilthoven, The Netherlands. Tel: 31-30-2743211-2970; Fax: 31- 30-2744436; E-mail: nopsecr@rivm.nl.

18-19 MARCH 1997: U.S. DEPARTMENT OF DEFENSE

“Environmental Security Modeling and Simulation Seminar and Workshop”

This two day event was held in Arlington, Virginia and focused on opportunities for improving environmental management and decision making through expanded use of modeling and simulation. The first featured presentations by each of the military departments on current environmental security modeling and simulation applications in remediation, pollution prevention and acquisition, conservation, and compliance. On the second day, resource-oriented modeling and simulation workshops were convened to provide in-depth information and training in the areas of estuarine/coastal waters, groundwater, riverine/watersheds, natural and cultural resources modeling, atmospheric and noise modeling, and industrial processes. Workshops emphasized current, successful applications, model selection, and sources of technical support. For more information, contact: Michael McNerney, Office of the Deputy Under Secretary of Defense for Environmental Security, Phone: 703-695-3321; Fax: 703-693-0493; E-mail: mcnernmj@acq.osd.mil; Internet: <http://www.acq.osd.mil/ens/>.

18-22 MARCH 1997: INTERNATIONAL STUDIES ASSOCIATION (ISA)

“Coping with Insecurity: Threats More Than Enemies”

This annual convention, held in Toronto, Canada, included multiple panels on environment, population, and security issues. ISA meetings commonly highlight the most recent scholarly work before it is widely published. Most notably, the Toronto convention featured a roundtable discussion on the research of the University of Toronto’s Project on Environment, Population and Security, a workshop of the Global Environmental Change and Human Security Project, and presentations on environmental refugees, environment and conflict, and redefining security. For more information, contact: Thomas J. Volgy, International Studies Association, 324 Social Sciences, University of Arizona, Tucson, AZ 85721. Fax: 520-621-5780; E-mail: isa@arizona.edu; Web site: <http://www.isanet.org/>.

20-22 MAY 1997: NATO COMMITTEE ON THE CHALLENGES OF MODERN SOCIETY (CCMS)

“Environment and Security in an International Context”

The third meeting of the NATO CCMS Pilot Study on Environment and Security in an International Context was held at the U.S. Army War College in Carlisle, Pennsylvania. The purpose of this pilot study is to analyze the relationship between environmental change and security on an international, regional, and global level. There have been many of these sessions over the last two years in Prague, Warsaw, Geneva, and Vienna. For more information, contact: Michael McNerney, Office of the Deputy Under Secretary of Defense for Environmental Security, Phone: 703-695-3321; Fax: 703-693-0493; E-mail: mcnernmj@acq.osd.mil; Internet: <http://www.acq.osd.mil/ens/> or <http://echs.ida.org>.

9-11 JUNE 1997: ASIA PACIFIC CENTER FOR SECURITY STUDIES (APCSS)/CENTER FOR STRATEGIC LEADERSHIP, U.S. ARMY WAR COLLEGE

“Environmental Change and Regional Security Conference”

This conference, held in Honolulu, Hawaii, provided a forum for national officials, decision makers, academics, and military officers to explore the security implications of environmental change within the Asia-Pacific region and to develop a framework for research on the emerging role of the environment in traditional regional security issues. For more information, contact: Dr. Stephen Noerper, Asia Pacific Center for Security Studies, Department of Regional Studies, 2255 Kuhio Avenue, Suite 1900, Honolulu, HI 96815. Tel: 808-971-8973; Fax: 808-971-8989.

12-14 JUNE 1997: INTERNATIONAL HUMAN DIMENSIONS OF GLOBAL CHANGE PROGRAMME (IHDP)

“1997 Open Meeting of the Human Dimensions of the Global Environmental Change Community”

The purpose of this meeting was to bring together the growing human dimensions of the global change research community. The conference featured a plenary session and a panel specifically on environmental security as a research priority area for IHDP. The intent was to promote exchanges of information on current research, teaching, and outreach; to encourage networking in this new field; and to attract social scientists, humanists, and others not previously involved in human dimensions work. The meeting was held at the International Institute for Applied Analysis (IIASA) in Laxenburg, Austria. For more information, contact: Ingrid Teply-Baubinder, IIASA, A-2361 Laxenburg, Austria. Tel: +43-2236-807; Fax: +43-2236-71 313; E-Mail: teply@iiasa.ac.at.

3-4 JULY 1997: ECOLOGIC, CENTRE FOR INTERNATIONAL AND EUROPEAN ENVIRONMENTAL RESEARCH

“International Workshop on Environment and Security”

This workshop, organized as a part of the two-year international pilot study project on environment and security for the NATO Committee on the Challenges of Modern Societies, was held in Berlin, Germany. It addressed scientific and political views on domestic and international conflict resulting from global environmental change and resource scarcity as they have emerged in Germany, Austria, and Switzerland. For more information, contact: Alexander Carius, Ecologic, Center for International and European Environmental Research, Friedrichstrasse 165, D-10117 Berlin, Germany. Tel: +49-30-2265-1135; Fax: +49-30-2265-1136; E-Mail: carius@ecologic.de.

18-20 JULY 1997: CAREER PRO/INSTITUTE FOR SCIENCE AND INTERDISCIPLINARY STUDIES (ISIS)

“Northeast Federal Facilities Cleanup Workshop”

This Workshop, held at Amherst College, gathered state and federal government representatives, RAB members, individuals, and the military to foster common understanding and improve communications in cleanup efforts. For more information, contact: Jeff Green, Project Coordinator, ISIS/Prescott D-1, 893 West Street, Amherst, MA 01002-5001. Tel: 413-582-5582; Fax: 413-582-5448; E-Mail: isis@hampshire.edu.

21-24 SEPTEMBER 1997: LOS ALAMOS NATIONAL LABORATORIES/U.S. DEPARTMENT OF ENERGY

“ModSim 97-USA”

This workshop on the role of modeling and simulation in environmental management was held in Albuquerque, New Mexico. It was intended to present recommendations that would form the basis for future use of modeling and simulation in environmental missions of DOE, industry, and other federal and state agencies. For more information, contact: Marja Shaner, Los Alamos National Laboratory, Environmental Management, EM, J591, Los Alamos, NM 87545. Tel: 505-665-7112; Fax: 505-665-8190; Web Site: <http://www-emtd.lanl.gov/Workshops/ModSim.html>.

6-7 NOVEMBER 1997: U.S. DEPARTMENT OF DEFENSE AND U.S. ENVIRONMENTAL PROTECTION AGENCY

“Role of the Military in Global Environmental Protection”

Held in Herndon, Virginia, this conference addressed military progress in implementing the Montreal Protocol and the role of the military in climate protection and drew representatives of the military and environmental community from a wide range of nations. For more information, contact: Judi Abraham, Conference Management Associates, Inc, 1401 Spring Lake Drive, Haymarket, VA 20169. Tel: 703-754-0066; Fax: 703-754-4261.

10-12 NOVEMBER 1997: FORBES MAGAZINE/PASHA PUBLICATIONS

“The Future of the U.S. and International Environmental Industry:
A Conference Focused on Strategy and Policy”

Created in partnership with the Departments of Energy and Defense and the Environmental Protection Agency, this conference brought together Congressional and administrative leaders, corporate leaders, and the environmental community in Washington, D.C. to examine strategies and policies for environmental cleanup. For more information, contact: The Future of the U.S. and International Environmental Industry, c/o Joan Hall & Associates, LLC, 140 Sherman Street, Fairfield, CT 06430. Tel: 203-319-3630; Fax: 203-379-3631.

12-14 NOVEMBER 1997: U.S. DIRECTOR OF CENTRAL INTELLIGENCE (DCI) ENVIRONMENTAL CENTER

“Consequences of Environmental Change: Political, Economic, Social”

Sponsored by the Central Intelligence Agency’s DCI Environmental Center, this conference of 150 scholars and practitioners met in regional subgroups to identify, describe, and assess environmental contributions to political, economic, and social instability. Papers prepared for this conference will be available as part of a conference proceedings volume. For more information, contact: Norm Kahn, DEC, 1041 Electric Avenue, Vienna VA 22182. Tel: 703-281-8077; Fax: 703-281-8229; Email: nkahn@erols.com.

20-22 NOVEMBER 1997: GLOBAL GREEN USA

"Fourth Annual Legacy Program Forum on Military Toxic Cleanup and Base Conversion"

Held in Indianapolis, Indiana, this year's forum focused on tools and strategies for revitalizing communities, and examined issues of ordnance disposal, cleanup, environmental law, and chemical weapons destruction. For more information, contact: Global Green USA, 1025 Vermont Avenue, NW, Suite 300, Washington, D.C. 20005-6303. Tel: 202-879-3181; Fax: 202-879-3182; E-Mail: rudy@igc.apc.org.

4 DECEMBER 1997: ROYAL NORWEGIAN EMBASSY, WASHINGTON, DC

"Norwegian-U.S.-Russian Initiatives for Environmental Cooperation in Northwest Russia"

This one day conference in Washington, D.C. featured presentations by senior Russian, American, and Norwegian government and private sector officials. Discussions focused on identifying challenges relating to nuclear waste and spent nuclear fuel, technology options and ongoing joint ventures, and policy cooperation and bottlenecks. The Honorable Curt Weldon (R-Pa.) presented the luncheon address on Congressional efforts to support environmental cooperation in the Russian Northwest. For more information, contact: Bjørn Brede Hansen, Royal Norwegian Embassy, 2720 34th Street, NW, Washington, D.C. 20008-2714. Tel: 202-944-8963; Fax: 202-337-0870; Internet: www.norway.org.

17-21 MARCH 1998: INTERNATIONAL STUDIES ASSOCIATION

"The Westphalian System in Global and Historical Perspective"

This annual convention held in Minneapolis, Minnesota, included multiple panels on environment, population, and security issues. Panels featured quantitative and qualitative 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. Fax: 520-621-5780; E-Mail: isa@arizona.edu; Web site: <http://www.isanet.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: 00 44 1782-583611 or 583513; Fax: 00 44 1782-584218; E-Mail: ird50@cc.keele.ac.uk.

SPRING 1997-WINTER 1997 WOODROW WILSON CENTER'S ENVIRONMENTAL CHANGE AND SECURITY PROJECT

"Discussion Group Meetings and Public Seminars"

Below is a list of meetings hosted by the Environmental Change and Security Project between February 1997 and December 1997. (See The Wilson Center Meetings section for summaries of these sessions.)

4 February 1997: "International Population Trends and Policy Choices: An Overview"

John Bongaarts, Vice President and Director of Research Division, The Population Council; Judith Bruce, Director of Gender, Family, and Development, The Population Council.

19 February 1997: "Department of Defense Preparations for the Western Hemisphere Defense Environmental Conference"

Sherri Goodman, Deputy Under Secretary of Defense (Environmental Security); Thomas E. Lovejoy, Counselor to the Secretary for Biodiversity and Environmental Affairs; Smithsonian Institution.

2 May 1997: "Findings of the Environmental Scarcities, State Capacity and Civil Violence Project: China, Indonesia and India"

Charles Victor Barber, World Resources Institute; Jeffrey Boutwell, American Academy of Arts and Sciences; Elizabeth Economy, Council on Foreign Relations; Thomas Homer-Dixon, Peace and Conflict Studies Program, University of Toronto; Valerie Percival, United Nations; and Vaclav Smil, Department of Geography, University of Toronto.

9 May 1997: "Civilian-Defense Partnerships on Environmental Issues: Past Lessons and Successes, Potential Pitfalls, and Opportunities"

Kent Butts, U.S. Army War College's Center for Strategic Leadership; Sherri Goodman, Deputy Undersecretary of Defense for Environmental Security; Marc Chupka, Assistant Secretary of Energy for Policy and International Affairs; Jonathan Margolis, Senior Advisor for Regional Policy Initiatives (OES), Department of State;

William Nitze, Assistant Administrator for International Activities, Environmental Protection Agency.

21 May 1997: "Findings of the "Pivotal States Project"

John Bresnan, Columbia University, East Asian Institute; Robert Chase, Yale University, International Security Studies; Daniel C. Esty, Yale University, School of Forestry and Environmental Studies; Sumit Ganguly, Hunter College; Emily Hill, Yale University, International Security Studies; Paul Kennedy, Yale University, Director of International Security Studies; Charles Norchi, Yale University, International Security Studies; Peter Smith, University of California at San Diego, Latin American Studies.

30 September 1997: "Climate Change: Bridging the Gap Between U.S. and European Attitudes, Analyses and Strategies"

Michael Grubb, Director, Energy and Environmental Programme, Royal Institute of International Affairs, London.

18-19 November 1997: "Conflict or Cooperation: The Challenges of Freshwater Resources into the Next Millennium"

Jerome Delli Priscoli, Senior Policy Advisor, Institute for Water Resources, U.S. Army Corps of Engineers; Aris Georgakakos, Georgia Water Resources Institute, Georgia Institute of Technology; Joseph Dellapenna, Professor, School of Law, Villanova University; Sumit Ganguly, Professor, Department of Political Science, Hunter College; Frank Hartvelt, Senior Water Policy Advisor, United Nations Development Programme; Fekri Hassan, Professor, Department of Egyptology, University of London; Steve Lonergan, Director, Center for Sustainable Regional Development, University of Victoria; Miriam Lowi, Assistant Professor, Department of Political Science, College of New Jersey; Ambassador Clovis Maksoud, Director, Center for the Study of the Global South, American University; Sandra Postel, Director, Global Water Policy Project; Andras Szöllösy-Nagy, Director, International Hydrological Program, UNESCO; Evan Vlachos, Associate Director, International School for Water Resources, Colorado State University; William Werick, Policy Analyst, U.S. Army Corps of Engineers; Aaron Wolf, Assistant Professor, Department of Geography, University of Alabama.

20 November 1997: "Damming Troubled Waters: Conflict over the Danube, 1950-2000"

Ronnie D. Lipschutz, Associate Professor, Department of Politics, University of California, Santa Cruz.

11 December 1997: "U.S. Population Activities: Ongoing Plans and Future Directions"

Julia Taft, Assistant Secretary of State, Bureau of Population, Refugees and Migration, U.S. Department of State; Duff Gillespie, Deputy Assistant Administrator, Center for Population, Health and Nutrition, U.S. Agency for International Development; Patricia Rowe, Chief, Population Studies Branch, International Programs Center, Census Bureau, U.S. Department of Commerce.

ENVIRONMENTAL CHANGE AND SECURITY PROJECT

Visit our new website at <http://ecsp.si.edu>

- ✓ ACCESS full text of the *ECSP Report* and *China Environment Series* from our Virtual Library
- ✓ PARTICIPATE in an interactive discussion group on environment, population, and security issues
- ✓ READ discussion group summaries from the ECSP and Working Group on Environment in U.S.-China Relations
- ✓ VIEW information about the Project and the Wilson Center

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 ECSP@erols.com; or by posting the address on our on-line discussion group at <http://ecsp.si.edu>.

Government Institutions

ARMY ENVIRONMENTAL POLICY INSTITUTE (AEPI)

<http://www.aepi.army.mil/>

This site contains indepth 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.

GODDARD DISTRIBUTED ACTIVE ARCHIVE CENTER (DAAC)

<http://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.

SPOTLIGHT ON SOUTHEAST ASIA FIRE AND AIR POLLUTION

http://www.state.gov/www/global/global_issues/fires.html

This U.S. State Department site lists publications and fact sheets related to the recent fires in Southeast Asia. It also provides information on air pollution and related links.

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)

<http://www.info.usaid.gov>

USAID's site provides current news stories, information from strategy papers and other reports, and links to other sites affiliated with USAID.

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 Growth and Protecting Human Health. It also includes an overview of U.S. Population Assistance, general demographic data, and data about specific health practices.

UNITED STATES DEPARTMENT OF AGRICULTURE / OFFICE OF THE NATIONAL FOOD SECURITY COORDINATOR

<http://www.fas.usda.gov/icd/summit/summit.html>

This site includes documents and press releases, food security updates, and general information on the World Food Summit.

Internet Sites and Resources

UNITED STATES BUREAU OF THE CENSUS/INTERNATIONAL PROGRAMS CENTER

<http://www.census.gov/ipc/www>

The International Programs Center's work in the area of population and security can be accessed through its International Database (IDB) at this site.

UNITED STATES CENTRAL INTELLIGENCE AGENCY (CIA)

<http://www.odci.gov/cia>

The CIA home page provides links to Agency publications, press releases, demographic maps, official statements, and other intelligence community Web sites.

UNITED STATES DEPARTMENT OF DEFENSE, ENVIRONMENTAL NETWORK AND INFORMATION EXCHANGE

<http://denix.cecer.army.mil/denix/denix.html>

The Defense Environmental Network & Information Exchange provides DoD personnel and contractors working on environmental security issues with legislative updates, departmental bulletins and links to other environmental security resources. DENIX is a project of the DoD's Defense Environmental Security Corporate Information Management Program Office (DESCIM).

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 links to government officials, projects, and divisions within DoD.

UNITED STATES DEPARTMENT OF ENERGY /ENVIRONMENTAL MANAGEMENT

<http://www.em.doe.gov/>

This database highlights programs within the U.S. Department of Energy that focus on environmental issues.

UNITED STATES DEPARTMENT OF ENERGY /FOSSIL ENERGY GATEWAY

<http://www.fe.doe.gov/>

The Fossil Energy Gateway site offers news on current fossil fuel topics, research projects aimed at creating a cleaner environment, and possible solutions to the growing problem revolving around climate change. This site also includes publications, information on federal oil reserves and on international fossil energy activities and regulations, as well as a searchable database.

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, 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.

International 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 (NATO), ENVIRONMENTAL CLEARINGHOUSE SYSTEM

<http://echs.ida.org>

The NATO Environmental Clearinghouse System (ECHS) web site serves as a link to environmental data, reports, and studies. The site serves as a tool for the multiple CCMS pilot studies and participating nations to acquire, 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 PROGRAM (UNDP)

<http://www.undp.org>

This site includes information on UNDP's sustainable human development activities and publications.

UNITED NATIONS ENVIRONMENT PROGRAM (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 non-governmental organizations and United Nations agencies to agree on a program of action. This web site 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 Nongovernmental Organizations

AMERICAN ASSOCIATION FOR THE DEVELOPMENT OF SCIENCE (AAAS) /POPULATION AND SUSTAINABLE DEVELOPMENT PROGRAM (PDS)

<http://www.aaas.org/internationalpsd/psd.htm>

This site provides information on population and sustainable development and AAAS programs, links to related websites, and highlights relationships among scientific research, human development, and interactions with the environment.

Internet Sites and Resources

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://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.

CENTER FOR ECONOMIC CONVERSION (CEC)

<http://www.conversion.org>

This page details CEC's attempts to build a sustainable peace-oriented economy and includes descriptions of local, state, and national efforts to do so.

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.

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.

ENVIRONMENTAL DEFENSE FUND (EDF)

<http://www.edf.org/>

This site includes a library of EDF's publications and discussion forums on issues such as environment and health, global warming, and endangered species. EDF's site also features a bi-monthly newsletter.

EVIDENCE BASED RESEARCH

<http://www.ebrinc.com>

The Evidence Based Research (EBR) webpage 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

<http://www.fas.org>

The Federation of American Scientists (FAS) website features current programs relating to emerging diseases, biological weapons, and nuclear nonproliferation.

GLOBAL ENVIRONMENTAL CHANGE AND HUMAN SECURITY(GECHS)/INTERNATIONAL HUMAN DIMENSIONS PROGRAM(IHDP)

<http://steve.geog.uvic.ca/GECHS/index.html>

The website includes working papers on human security, environmental change, and human migration. It also

Internet Sites and Resources

includes valuable links to other human security and environmental security sites. The site will soon feature policy-briefing papers on these topics.

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

<http://www.gwp.sida.se/>

This site details the work and objectives of Global Water Partnership (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 website 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.

INTERNATIONAL HUMAN DIMENSIONS PROGRAM (IHDP)/GLOBAL ENVIRONMENTAL CHANGE AND HUMAN SECURITY

<http://geography.geog.uvic.ca/hdp/htmls/index.html>

This home page gives a project description and outline of IDHP activities. It provides access to reports by IDHP and other key research organizations, an online bibliography and global change hyperlinks.

INTERNATIONAL INSTITUTE FOR THE ENVIRONMENT AND DEVELOPMENT (IIED)

<http://www.iied.org>

The IIED website offers a variety of services, including a searchable database, resource center and publications. Some of the programs this site highlights are Environmental Planning, Environmental Economics, Sustainable Development, Forestry and Land Use, Drylands, and Human Settlements.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

<http://www.unep.ch/ipcc/ipcc-0.html>

The IPCC was established by the UN to assess scientific information about climate change relevant to international and national policy. The IPCC home page provides links to current and past reports, working groups and meeting schedules.

INTERNATIONAL POLICY COUNCIL ON AGRICULTURE, FOOD, AND TRADE

<http://www.agritrade.org>

This site includes International Policy Council on Agriculture, Food, and Trade (IPC) position papers on global food security issues and agricultural policies, information on conferences and seminars, a database of IPC publications, and links to IPC affiliates.

INTERNATIONAL RELATIONS AND SECURITY NETWORK/CENTER FOR SECURITY STUDIES

<http://www.isn.ethz.ch/>

The International Security Network page, maintained by the Environment and Conflict Project (ENCOP), links to numerous security-related Web pages, including major institutional sources of information on environmental security and environmentally linked conflicts.

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.

NEGATIVE POPULATION GROWTH HOMEPAGE (NPG)

<http://www.npg.org/>

This site contains facts and statistics on population and immigration practices, legislation information, and links to other resources.

Internet Sites and Resources

OVERSEAS DEVELOPMENT INSTITUTE (ODI)

<http://www.oneworld.org/odi/>

This site features the Overseas Development Institute's latest research on natural resources, humanitarian policy, and international economic development.

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. Their page allows access to its programs and publications.

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.

POPNET/ POPULATION REFERENCE BUREAU

<http://www.popnet.org>

PopNet is produced and maintained by the Population Reference Bureau and is a resource for population information. PopNet presents information on Demographic Statistics, Economics, Education, Environment, Gender, Policy, and Reproductive Health. Its resources include websites produced by government and international organizations, nongovernmental organizations, university centers, and associations and listserves.

POPULATION ACTION INTERNATIONAL (PAI)

<http://www.populationaction.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.

POPULATION 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 issues papers.

POPULATION REFERENCE BUREAU (PRB)

<http://www.prb.org/prb>

The PRB site details information on population trends for policymakers, educators, the media, and the public. This site provides access to PRB's most recent activities and 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.

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 environ-

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mental data.

STOCKHOLM ENVIRONMENTAL INSTITUTE (SEI)

<http://www.sei.se/>

SEI is an international institute for environmental technology. Its site offers a variety of links and publications.

TRADE AND ENVIRONMENT DATABASE (TED)

<http://gurukul.ucc.american.edu/ted/ted.htm>

The Trade and Environment Database webpage provides links to information about the TED projects, its cases, and other relevant websites. Over 350 cases relating trade and the environment can be sorted by legal, geographic, trade and environment attributes. Other TED research papers relating trade and the environment to economics, conflict and culture are also posted on this website.

TRANSBOUNDARY ENVIRONMENTAL INFORMATION AGENCY

<http://www.teia.org>

This site contains information on international environmental cooperation across the Baltic states and north-western Russia.

WEATHERVANE: A DIGITAL FORUM ON GLOBAL CLIMATE POLICY

<http://www.weathervane.rff.org>

This website contains current research and publications relating to climate change policy. A list-serve is available for people who wish to join.

WORLD POPULATION

<http://sunsite.unc.edu/lunarbin/pop.gif>

This site gives an up-to-the-second world population count.

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 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.

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.

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/GLOBAL SECURITY PROGRAMME

<http://www.gsp.cam.ac.uk/>

The Global Security Programme site provides information on the publications, staff, and activities of this institute. This programme attempts to bring together traditional environment, development, and international relations studies to better understand the post-Cold War period.

Internet Sites and Resources

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 UNIVERSITY/CENTER FOR THE ENVIRONMENT

<http://www.cfe.cornell.edu>

This site provides an overview of the Center, which is designed to foster cooperation between private and public institutions as a means to resolve environmental conflicts. The page includes links to its publications and related web sites.

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.

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, ongoing research, and campus programs. This site 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://utl1.library.utoronto.ca/WWW/pcs/pcs.htm>

The University of Toronto's Peace and Conflict Study Program's home page contains links to its Project on Environment, Population and Security, and its Project on Environmental Scarcities, State Capacity and Civil Violence.

UNIVERSITY OF TORONTO/ENVIRONMENTAL SECURITY LIBRARY & DATABASE

<http://www.library.utoronto.ca/www/pcs/database/libintro.htm>

This site provides access to the Environmental Security Library and Database which has an extensive selection of information on environmental stress and violent conflict in developing countries.

YALE CENTER FOR ENVIRONMENTAL LAW AND POLICY

<http://pantheon.yale.edu/~epcenter>

This site features the Center's strong focus in trade and environment, forestry, and the politics of conservation.