Woodrow Wilson International Center for Scholars

ENVIRONMENTAL CHANGE AND SECURITY PROJECT

REPORT

ISSUE 10 2004

From Planting Trees to Making Peace: The Next Steps for Environment, Population, and Security

The United Nations and Environmental Security

Population, Development, and Environment in Ethiopia

Reviews of New Publications

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ENVIRONMENTAL CHANGE AND SECURITY PROJECT

Since 1994, the Environmental Change and Security Project (ECSP) has explored the relationships among environment, population, disease, economic development, migration, political stability, and violent conflict. ECSP brings international policymakers, practitioners, and scholars to Washington, D.C., to address the public and fellow experts on environmental and human security. The project distributes two annual journals, the *Environmental Change and Security Project Report* and the *China Environment Series*, along with a biannual newsletter and original research, to over 7,000 people around the world. *ECSP News*, a monthly e-mail newsletter, links 3,000 subscribers to news, meeting summaries, and event announcements on the project's comprehensive website, http://www.wilsoncenter.org/ecsp. ECSP is directed by Geoffrey D. Dabelko and is housed in the Woodrow Wilson Center's Division of International Studies, headed by Robert S. Litwak.

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The *Environmental Change and Security Project Report* is sent annually free of charge throughout the world. Contact ECSP at the address below to be placed on the mailing list or for instructions regarding the submission of articles.

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FOREWORD

GEOFFREY D. DABELKO

Editor

"Environmental security is the disarmament policy of the future." Klaus Toepfer, the executive director of the UN Environment Programme, chose the Woodrow Wilson Center's Environmental Change and Security Project (ECSP) to deliver this message. Why? Because he believes it is the "leading institute for environmental security in the United States." Since its founding in 1994, ECSP has explored the relationships among environment, population, disease, economic development, migration, political stability, and violent conflict. Over the last 10 years, more than 250 ECSP meetings have drawn academics, policymakers, and practitioners to the Woodrow Wilson Center to welcome luminaries such as Gro Harlem Brundtland, Warren Christopher, Jane Goodall, Mikhail Gorbachev, Jeffrey Sachs, and General Anthony Zinni. The *ECSP Report's* nine issues, distributed to 7,000 people around the world annually, have shattered the disciplinary boundaries separating environment, population, and security. This 10th anniversary issue celebrates ECSP's legacy and looks forward to the new challenges facing this exciting field.

The *ECSP Report*, the only forum dedicated to showcasing environmental security, has transformed concepts of conflict and peace. In its pages, leading scholars have debated theoretical underpinnings, honed methodological approaches, and evaluated empirical evidence. In this issue's special commentary section, "From Planting Trees to Making Peace: The Next Steps for Environment, Population, and Security," Jared Diamond, Margaret Brusasco-Mackenzie, Erika Weinthal, Richard Cincotta, Roger-Mark De Souza, and Richard Matthew and Bryan McDonald honor ECSP's contributions to the field by outlining their visions for the next 10 years.

Like the Woodrow Wilson Center's namesake, ECSP bridges the chasm between academic theorizing and practical policymaking. Beltway insiders turn out to quiz big thinkers, and professors and practitioners meet political players on neutral ground. ECSP was among the first to systematically shine a light on nascent U.S. policy efforts in environmental security by publishing reports from former Vice President Albert Gore's State Failure Task Force and the CIA's National Intelligence Council. Continuing this long tradition, *ECSP Report 10* includes three papers—on water, climate change, and natural resources—commissioned by the United Nations Foundation for the Secretary-General's High-Level Panel on Threats, Challenges, and Change, which Kofi Annan charged with recommending effective collective responses to the world's security problems.

As described by the Secretary-General, the universe of threats to peace includes a multitude of interdependent variables. Large youth populations, water pollution, HIV/AIDS, climate change: all of these factors, and more, could reduce human security and potentially

This 10th anniversary issue celebrates ECSP's legacy and looks forward to new challenges.

Past ECSP Reports (Credit: ©David Hawxhurst, Woodrow Wilson Center)

destabilize nations. But it is essential to look at the links between population growth and environmental change to understand the roots of—and the solutions to—these "soft" threats. In a special report, Sahlu Haile of the Packard Foundation describes how decades of population growth in Ethiopia have contributed to overfarming and deforestation, which have degraded the environment and undermined development. *ECSP Report 10's* book reviews also reflect the project's interdisciplinary focus, covering a broad spectrum of new publications that address the connections among population, health, environment, and security.

The year 2004 brought a number of changes to ECSP. More meetings—a 25-percent increase from the year before—and more off-site conferences reflect the growing interest in this crucial nexus in the United States and abroad. Our monthly e-newsletter, *ECSP News*, delivers meeting summaries, project news, and event announcements straight to the inboxes of 3,000 subscribers, allowing us to reduce the size of our publications. Our ever-expanding website's new topical organization will make finding news, research, and links as easy as a click of the mouse. As part of this expansion, *ECSP Report 10* introduces a new column—"dotPop"—that illustrates the wealth of population data available online.

A decade after ECSP began, the Nobel Committee recognized environmental connections to security by awarding Wangari Maathai the Nobel Peace Prize for her work linking sustainable development and human rights. ECSP pledges to honor work like hers by continuing to map the path to a sustainable peace for the next 10 years—and beyond.

COMMENTARY

The Next Steps for Environment, Population, and Security

Geoffrey D. Dabelko is director of the Environmental Change and Security Project at the Woodrow Wilson International Center for Scholars.

GEOFFREY D. DABELKO

In 1994, interest in environment and security issues exploded. Civil unrest in Liberia, Rwanda, Somalia, and Haiti offered graphic illustrations of "state failure." Senior politicians, like U.S. Vice President Albert Gore, began to ask how these conflagrations might be related to natural resources. In academia, Canadian political scientist Thomas Homer-Dixon (1994) published the results of his investigations into environmental scarcity and acute conflict in the widely respected journal *International Security*. His Swiss counterpart Günther Baechler undertook the first round of the Environmental Conflicts Project (ENCOP) case studies. Critics in the global North and South took aim at these claims, spurring a lively debate (Conca, 1994; Dalby, 1994; Käkönen, 1994; Levy, 1995a, 1995b).

Robert Kaplan's influential 1994 piece in *The Atlantic Monthly,* "The Coming Anarchy," brought this research to a wider audience. Kaplan's breathless claim, based on his travels in West Africa, that environment would become *the* national security issue of the 21st century grabbed newspaper headlines and shot to the top of policymakers' agendas. Citing Kaplan's piece and political instability in West and East Africa, Gore created the State Failure Task Force to investigate these collapses, mandating that the analyses fully integrate environmental and demographic variables.[1]

Kaplan's hyperbolic comparison of Homer-Dixon's ideas to George Kennan's influential "X article"[2] on Soviet containment raised the ire of many old hands (and did few favors for Homer-Dixon or the nascent field). Environmental security was not all-encompassing enough to provide a new template for international affairs, as some hoped. That same year, the United Nations threw its hat into the ring with "human security," which focused attention on the individual person, who is usually neglected under state-centered definitions of security (United Nations Development Programme, 1994). But these concepts only supplemented, not replaced, traditional frameworks of development and security.

Founded by P.J. Simmons in 1994, the Woodrow Wilson Center's Environmental Change and Security Project (ECSP) waded through post-Cold War struggles to redefine security in order to understand the environment's role in conflict. ECSP offered Washington policymakers a neutral, nonpartisan forum where odd bedfellows—army generals and conservation biologists, demographers and CIA analysts—could learn from one another. Heads of state and directors of UN agencies, untenured post-docs and field workers: ECSP brought together everyone trying to trace the complex links among environment, population, and security, and devise effective policies and programs for the field.

The Next Steps for Environment, Population, and Security

After 10 years of multisectoral, multidisciplinary cross-pollination, where are we now? What are the key questions and themes for the next decade? For this 10th issue of the *ECSP Report*, we asked six scholars, practitioners, and policymakers to offer their recommendations for the future of environmental security.

Eminent scientist and Pulitzer Prize-winning author Jared Diamond connects environmental degradation to societal failure, and offers steps that any of us—scholar, policymaker, or consumer—can take to promote sustainable development and reduce the threat of political collapse. Former European Commission environment official Margaret Brusasco-Mackenzie laments the loss of momentum that pushed environmental security and sustainable development forward in the heady rush of the early nineties. She highlights some of the European Union's efforts to reinvigorate these policies in a world dominated by "hard" security headlines.

Erika Weinthal of Tel Aviv University tackles the evolving concept of environmental peacemaking, utilizing examples from the Middle East and Central Asia to promote the potential of environmental paths for reaching peace—and keeping it. Richard Cincotta builds on Population Action International's influential report *The Security Demographic* to outline concrete steps for research and policy to untangle the significant correlations between demography and security. Both a scholar and an advocate, Cincotta presents a compelling case for why the foreign and security policy community must seriously consider demographic dynamics such as demographic transition theory, youth bulges, and migration.

Roger-Mark De Souza of the Population Reference Bureau points out that while population-health-environment (PHE) programs have enjoyed some success in the field, they are endangering that success by not effectively communicating the advantages of these approaches. Without systematically documenting and advertising the benefits of integrating PHE, programs will not receive the support of policymakers and donors in both the developing and developed worlds. Finally, Richard Matthew and Bryan McDonald of the Center for Unconventional Security Affairs at the University of California, Irvine, apply lessons from environmental security research to develop their concept of a broader network of threats and vulnerabilities that they believe constitutes a new 21st century security agenda.

ECSP offered Washington policymakers a neutral, nonpartisan forum where odd bedfellows—army generals and conservation biologists, demographers and CIA analysts—could learn from one another.

Environment, Development, and Sustainable Peace

To these worthy ideas, I would add a few priorities. As scholars, we must identify the pieces missing from the environment, conflict, and cooperation puzzle and examine the gaps that inhibit political responses. We must move beyond the false dichotomy between scarcity and abundance. We must push forward with the growing effort to invert the conflict thesis and look at environmental pathways to confidence building and peacemaking. In *Environmental Peacemaking,* Ken Conca and I (2002) presented case studies, including one by commentary contributor Erika Weinthal, to spur the conversation and spark interest in these mechanisms; however, the research community has yet to trace the pathways, examine a significant set of cases, and evaluate relative success. In many ways, academia is just catching up to the policy world, where organizations as diverse as local NGOs, the World Bank, and the U.S. military have engaged in environmental peacemaking.[3]

But policymakers must act fast to avoid missing opportunities to build peace. Instead of merely reacting to the symptoms of environment-conflict linkages, they should proactively extinguish hotspots by bolstering confidence and building cooperation. As Alexander Carius and I outlined in *Understanding Environment, Conflict, and Cooperation*, published by the United Nations Environment Programme (UNEP) in 2004, institutions need to bridge disciplinary borders between academia and policy, reduce compartmentalization among their

departments, balance participation by elite-level and broad-based stakeholders, and improve the ways in which policies are communicated, perceived, and justified.

Population is often on the other side of the disciplinary boundary, even though it is an integral variable. ECSP has sought to draw population out of its political and theoretical isolation and into the mainstream of environmental security research and policy. Population and environment organizations, offices, and researchers do not spend enough time engaging each another, partly due to fears that population is a political scarlet letter and environment is a marginal issue. Some may find focusing on population growth in the developing world exploitative, xenophobic, or hypocritical, given the impact of Northern consumption on resources. Yet, pretending demography is disconnected from environment and security misrepresents reality and excises an effective avenue for understanding environment, conflict, and cooperation.

Just as we cannot ignore demography, it is equally shortsighted not to investigate how livelihoods, poverty, and resource use are related to conflict. As UNEP Executive Director Klaus Toepfer told ECSP (2004), "Sustainable development is a security imperative. Improving degraded environments and achieving sustainable development enhances human security, prevents conflict, and builds peace." Environmental security has come late to these issues, but our Southern colleagues' ever-louder calls for placing the issues within a development context will help address this shortcoming.

Just as the field of environmental security must better take account of the development imperative that drives policy in the global South, so too must it tackle consumption and the role of the global economy. Local conflicts in the developing world are often related to global patterns of resource use, and therefore we must factor them into our equations more explicitly. Examining how Northern consumption exacerbates climate change, for example, could add nuance to a discussion dominated by doomsday scenarios that drown out practical ideas for action.

But policymakers must act fast to avoid missing opportunities to build peace. Instead of merely reacting to the symptoms of environment-conflict linkages, they should proactively extinguish hotspots by bolstering confidence and building cooperation.

Planting Trees, Making Peace

When I learned that environmental activist Wangari Maathai of Kenya had been awarded the Nobel Peace Prize in recognition of her decades-long fight to protect Kenya's forests from corruption and degradation, I was overjoyed—it was the best 10th anniversary present ECSP could receive. Maathai's Green Belt Movement planted 30 million trees across the country, and in the process, employed thousands of women and offered them empowerment, education, and even family planning.[4] Maathai firmly believes that environmental protection is inextricably linked to improving human living conditions. As she told Norway's TV2, "If we improve the management of our natural resources, we help promote peace."

Awarding the peace prize to an environmental activist certainly raised eyebrows. Some accused the Nobel Committee of straying too far from the traditional concept of peace. According to these naysayers, the committee should not expand its view of war and peace to include local livelihood conflicts that emerge from natural resource exploitation, corruption, constrained public participation, maldevelopment, and inequity.

But the struggle over natural resources fuels conflicts across the world. "Maathai stands at

Wangari Maathai, 2004 Nobel Peace Prize Winner (credit: Goldman Environmental Prize)

the front of the fight to promote ecologically viable social, economic, and cultural development in Kenya and in Africa," said the Norwegian Nobel Committee (2004). "She represents an example and a source of inspiration for everyone in Africa fighting for sustainable development, democracy, and peace." The academic world should stop arguing over two sides of the same coin, and instead explore how livelihood security could encourage cooperation and prevent conflict. Policymakers and practitioners must rise above interagency squabbles and ineffective Band-Aid approaches, and instead pursue integrated and sustained efforts to redress the roots of conflict and promote environmental pathways to peace. As the Nobel Committee proclaimed, "Peace on earth depends on our ability to secure our living environment."

Notes

1. The State Failure Task Force is now known as the Political Instability Task Force. Its Phase III results are available on the website of the University of Maryland's Center for International Development and Conflict Management at http://www.cidcm.umd.edu/inscr/stfail/.

2. The "X article," originally a telegram sent by George Kennan to the U.S. Department of State in 1946, was published in *Foreign Affairs* in 1947 as "The Sources of Soviet Conduct"; see http://www.cnn.com/SPECIALS/cold.war/episodes/04/documents/x.html.

3. See Friends of the Earth Middle East's "Good Water Makes Good Neighbors Project" at http://www.foeme.org/water.htm; the work by the World Bank and UNDP to facilitate the Nile Basin Initiative, at http://www.nilebasin.org/; and the Arctic Military Environment Cooperation Programme, through which the United States, Norway, and Russia cooperatively address radioactive contamination in northwestern Russia, at https://www.denix.osd.mil/denix/Public/Intl/AMEC/declar.html.

4. See Dabelko (2004) for more information on Maathai's Nobel Peace Prize.

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Environment, Population, and Health: Strategies for a More Secure World

JARED DIAMOND

Globalization—the increasing interconnectedness of the modern world—has many consequences: cultural homogenization, such as the expansion of the English language; the spread of certain consumer products, like Coca-Cola, cars, and popular music; and economic interconnectedness, including the much-discussed overseas transfer of jobs. These consequences arouse strong feelings and emotional reactions, and sometimes, violent protests. The fundamental causes of globalization—more efficient communications and transport—are not going to change, but we can try to anticipate and control its consequences.

These facets of globalization seem new and unprecedented, and at first, we might think we have nothing to learn from history. In fact, history is full of examples of slower and spatially limited globalizations. A past society that appears to be the polar opposite of our globalized world, isolated Easter Island in the Pacific Ocean, encountered nearly fatal problems of population, environment, and health.

Easter Island's 11 clans depended on each other for food and other supplies, and to erect the island's famous statues. But after rampant population growth led to total deforestation, Easter Island collapsed in an epidemic of cannibalism. The population crashed, war broke out between the clans, and people began throwing down other clans' statues. By 1840, all of the statues that the islanders had erected at great effort had been thrown down, the government had been overthrown, their religion had collapsed, and 90 percent of the people were dead. By the 1870s, the island, which had originally supported 15,000 people, had only 111 inhabitants. Because Easter Island is isolated, it is the purest case in history of an ecological collapse uninfluenced by neighboring societies. There were no friends to offer help or enemies to march in. All 11 clans—all sharing resources in a mini-globalized world—fell together.

Easter Island is a metaphor for the modern world. When the Easter Islanders got into trouble, there was no place to which they could flee and no one whom they could summon to help because Easter Island was isolated in the middle of the Pacific Ocean. Similarly, if our modern society gets into trouble, there is no other planet from which we can seek help, and there is no other planet to which we are going to be able to flee. We are like Easter Island in the Pacific Ocean.

Our world is interconnected and interdependent, like Easter Island's 11 clans. Today, we face the same problems—loss of forests, fisheries, biodiversity, fresh water, and topsoil—that dragged down past societies. But for the first time in world history, we are producing or transporting toxic materials, greenhouse gases, and alien species. All these environmental problems are time bombs. The world is now on an unsustainable course, and these problems will be resolved one way or another, pleasantly or unpleasantly, within the next 50 years.

Jared Diamond is a professor of geography and physiology at the University of California, Los Angeles, and the Pulitzer Prize-winning author of the widely acclaimed *Guns, Germs, and Steel: The Fates of Human Societies.* His next book, *Collapse: How Societies Choose to Fail or Succeed,* will be published by Penguin in January 2005.

Countries that are overwhelmed by environmental problems tend to develop political and economic problems. Ask a politically naïve ecologist to name the countries with the worst environmental and overpopulation problems. The environmentalist would say they include Afghanistan, Burundi, Haiti, Indonesia, Iraq, Madagascar, Nepal, Pakistan, Philippines, Rwanda, and the Solomon Islands. And then ask a First World politician who does not care about the environment to name the world's trouble spots, and the politician would say they include Afghanistan, Burundi, Haiti, Indonesia, Iraq, Madagascar, Nepal, Pakistan, Philippines, Rwanda, and the Solomon Islands. The two lists are identical because of cause and effect: people in countries with severe population, environment, and health problems get desperate. If they have no hope, they turn to drastic things like civil war and terrorism and make trouble not only for themselves but also for other countries.

In short, globalization is more than the First World sending the Third World good things, like Coca-Cola and the Internet. Globalization can go in two directions: "They" can send "us" bad things, such as terrorism, illegal immigrants, and diseases like SARS, malaria, and Ebola. It also means us sending them bad things in return. When Easter Island collapsed around 1680, its collapse did not affect anybody else in the world and nobody knew about it. Today, no society can collapse without affecting other societies. And so now, out of self-interest, we are involved with every other society in the world.

What Can We Do?

Our current economic and political problems can be depressing. But I see hope for several reasons: first, all the problems that I have ticked off are problems that we caused. Every one of our problems—deforestation, overfishing, water scarcity, and toxic waste—is of our own making. Therefore, we can choose to stop causing them. Our success depends on a mix of small-scale, bottom-up solutions and large-scale, top-down solutions: individual steps to manage our shared resources and governmental actions to prevent degradation.

Second, economics is on our side. A public heath campaign to throttle the spread of tuberculosis and malaria would cost about $25 billion. That seems like a lot of money until you consider that the interventions in Afghanistan and Iraq cost $80 billion to $100 billion (and that does not include the tens or hundreds of billions for nation building and the subsequent military actions). It would be relatively cheap to solve the world's public health problems, which if left untreated, may ultimately lead to the explosions that cause us to send in our troops. For $25 billion, we could start solving the world's ultimate problems; instead, we have chosen to solve just the proximate problems in a few places. The Band-Aids cost much more than the antibiotic.

Third, an especially effective strategy for dealing with population problems is to empower women to plan the size of their families. I often hear the argument that we Americans have no business telling others how many babies they should have and therefore we should not "force" family planning on anyone. But this is ignorant: people in the Third World know much better than any American the consequences of large families—they do not have enough money to feed their children, buy them clothes and books, or send them to school. They want the means to control their family size. Our government does not even have to actively provide the means; all it has to do is step back and stop interfering with private organizations that want to provide it.

Finally, individuals and groups of individuals can address these major problems relatively cheaply if we choose to do so:

We can vote. In a democracy, the government's top-down actions result from the voters' bottom-up expressions of will. And some elections (as we have recently seen in the United States) are settled by small numbers of voters.

We can join groups that pool their resources effectively. We can give modest sums of money to highly leveraged organizations. For example, World Wildlife Fund (WWF) has an

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People in countries with severe population, environment, and health problems get desperate. If they have no hope, they turn to drastic things like civil war and terrorism and make trouble not only for themselves but also for other countries.

annual budget of $80 million to $120 million, which seems like a lot of money until you consider that it is supposed to address all of the world's environmental problems. However, WWF is highly leveraged; if you give $150, governments will chip in $1000. Therefore, your modest contribution to highly effective, highly leveraged organizations can make a big impact.

We can speak out on public policy matters. The great majority of academics are not only uninterested in speaking to the public, but also have reservations about it. They feel that if they speak to the public, it shows they are self-interested and no longer unbiased. It is also important to find people who are charismatic and well-known, such as Hollywood celebrities, and engage them. They are known by billions of people around the world and they could be effective messengers.

We can encourage and support collaborations between big businesses and environmental organizations. Some of the most powerful forces in the world today are big businesses, and unfortunately, some use that power in environmentally destructive ways. However, quite a few realize that it is much cheaper to solve environmental problems at the outset rather than wait for a billion-dollar disaster like the Exxon Valdez spill, the Bhopal chemical plant, the Buffalo Creek coal mine in West Virginia, and the Panguna copper mine in Papua New Guinea. For the last six years, I have been working in Chevron Texaco's oil fields in Papua New Guinea, in collaboration with WWF, because Chevron Texaco decided, after the 1969 Santa Barbara oil spill, that it would be cheaper to avoid oil spills than to clean them up. Another example: in 1993, a number of major logging companies got together with WWF to set standards for sustainable forestry and establish the Forest Stewardship Council to label consumer products. Similarly, six years ago, Unilever—the world's largest wholesaler of seafood products—became concerned that they were going to run out of seafood. Unilever collaborated with WWF to establish the Marine Stewardship Council, which sets standards for sustainable fishing.

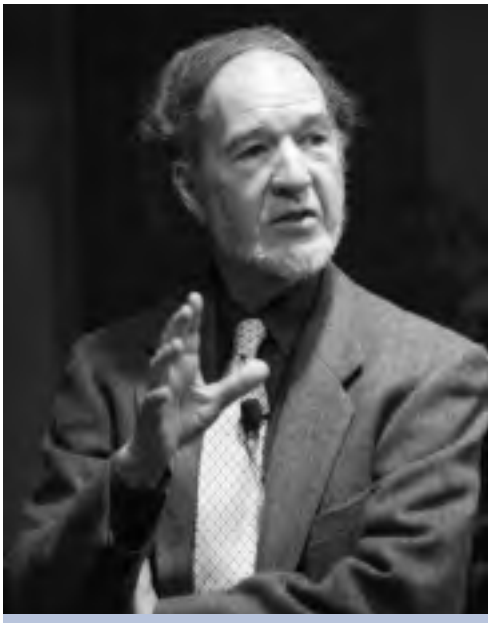
We can exercise consumer choice. We can punish companies that damage the environment and patronize those that adhere to environmental standards like sustainability pledges. For example, consumers can choose seafood from well-managed fisheries, such as Alaska's wild salmon. Or, consumers can vent their wrath over the Valdez spill by not buying Exxon gas. Knowing where to express your views is much trickier in the mining industry, because there is a series of steps between the mines and the consumer. Gold mining, for example, can be frightfully destructive, spilling cyanide into streams. Like most consumers, I do not have the faintest idea where the gold for my wedding ring was mined. But we can identify the part of the business chain that is susceptible to pressure and knows where the gold is mined. About two years ago, Tiffany's Jewelers—one of the 10 major gold retailers in the United States—realized that its stores were going to be picketed, so it switched its business to a clean mining company, BHP in Australia. In industries like mining and logging, we can trace the supply chain to figure out where consumers can most profitably use their limited clout.

Conclusion

We are the first society in human history that can learn from distant countries and the remote past. When we turn on our television sets, we

can see the consequences of ecological messes in Afghanistan and Baghdad and Somalia. We know what happened to Easter Island in 1680, the Anasazi in the southwestern United States in 1118, and the classic lower Mayan civilization in 810. We know about environmental disasters in the past and around the world, and we can choose to learn from these mistakes. The Easter Islanders, when their society was collapsing, did not know that Anasazi society had collapsed for the same reason 550 years before. We have the opportunity to learn; the Easter Islanders did not.

We are in the middle of an exponentially accelerating horse race. On one hand, the destructive forces in the world are increasing exponentially. On the other, the environmental movement is increasing exponentially. This horse race will be settled within the next 50 years, and it is up to you to influence which horse will win.



Jared Diamond (Credit: ©David Hawxhurst, Woodrow Wilson Center)

Editor's Note: This commentary is an edited transcript of an address Dr. Diamond gave at the Woodrow Wilson Center on January 30, 2004.

Environmental Security: A View From Europe

MARGARET BRUSASCO-MACKENZIE

Since the 1992 Conference on Environment and Development in Rio de Janeiro—and the founding of the Environmental Change and Security Project in 1994—much has changed, but unfortunately, not much for the better. At Rio, the world community signed up for a new economic model based on justice for all—including the world's poor—that would ensure sustainable development of both industrialized and less-industrialized nations. As Cold War tensions faded, a new field emerged that stretched the traditional definition of insecurity to encompass "soft" or "human" security issues like environmental degradation and scarcity of vital natural resources. While this redefinition gained credence in the 1990s within the foreign policy, development, and even defense communities, it is not widely recognized or precisely delineated. And since September 11, the overwhelming focus on homeland defense and the war on terrorism has almost completely eclipsed broader definitions of security.

In 2004, the United States allotted $36 billion for homeland security (Department of Homeland Security, n.d.) and more than *ten times* that for the military (Center for Defense Information, n.d.). Billions more have been spent by the rest of the "coalition of the willing" on the Iraq war. Contrast that with the $11.3 billion the United States spends on foreign aid each year (USAID, 2003) and the $54 billion to $62 billion needed annually to cut poverty in half by 2015 (Devarajan, Miller, & Swanson, 2002). Clearly, the new model of development—one that could ensure environmental security—has been put on the back burner by the hostilities in Iraq and the war on terrorism. Certain civil liberties in coalition countries have also been shoved aside by these wars, via the United States' Patriot Act and the United Kingdom's Anti-terrorism, Crime, and Security Act 2001. How can we go to war in the name of democracy and simultaneously encroach on our own (and foreigners') democratic rights? Despite these "wars," we have not achieved even limited security in the Middle East.

How do we get back on track? We must reinvigorate the comprehensive—and reject the exclusively militaristic—definition of security. Ten years after Rio, the 2002 World Summit on Sustainable Development in Johannesburg augmented several positive efforts towards sustainable development. The developed countries agreed to give more aid to developing countries, especially the least developed countries in Africa (via the Monterrey Commitments).[1] The members of the Organisation for Economic Co-operation and Development (OECD) agreed to help poor countries meet the UN's Millennium Development Goals (MDGs; OECD, 2001). The Doha trade round is inching towards more equity in the global trading system.[2] All of these steps will provide more aid and assistance to those countries suffering from extreme poverty

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and deprivation. But what about the environment? If we take stock of the last dozen years, has the health of the planet improved, and what steps can we take to ensure that this development assistance is sustainable for the economy and the Earth?

The Diagnosis

The world's population more than doubled from 1950 to 1998, and in the last 10 years it has increased by about 14 percent to reach a staggering 6.4 billion (United Nations Population Division, 2003). Optimistic projections peak in 2050 at 9 billion, an increase of 50 percent despite notable strides in family planning and the uncertain effects of HIV/AIDS (Population Reference Bureau, 2004). This unprecedented population growth has directly pressured land resources by increasing and intensifying agricultural use of marginal land, subjecting it to damaging overuse, such as excessive irrigation. Although 20th century inventions revolutionized agricultural productivity, 831 million people across the world remain hungry and malnourished (United Nations Development Programme, 2004). During the first half of the 21st century, many areas of the globe are expected to suffer heavy losses of cropland due to degradation, soil erosion, and climate change. About two billion hectares of soil—equal to 15 percent of the Earth's land cover—is already degraded (World Resources Institute [WRI], 2000). Between 1984 and 1998, the world's grain harvest fell behind population growth, with output dropping by 9 percent, or 0.7 percent yearly (Brown, Gardner, & Halweil, 1999). The prognosis is disheartening; there are so many more mouths to feed, but less to feed them.

The Food and Agriculture Organization (2003) predicts that developing countries will be forced to steadily increase their food imports. Unable to meet rising demands for food, countries will suffer greater poverty, declining health, higher infant mortality, and increased migration. As agriculturalists encroach on pastoralists in Africa, land use disputes can contribute to violent conflict.[3] So can migration, as in Chad, where incoming refugees competed with locals for scarce land resources (United Nations High Commissioner for Refugees, 2004). Deforestation exacerbates the competition for livelihoods; forest cover has declined by 2.4 percent since 1990, despite our pledges at Rio to reverse this trend (WRI, 2000).

Water stress is even more life-threatening than degraded land resources. By the mid-1990s, 80 countries, representing 40 percent of the world's population, suffered serious water shortages (United Nations Environment Programme [UNEP], 2002). By 2025, two-thirds of the entire world could experience moderate to severe water stress (United Nations Department of Economic and Social Affairs, 2002). Eighteen percent, or 1.1 billion people, currently lack access to safe drinking water, and 2.4 billion do not have adequate sanitation, mostly in Africa and Asia. Unsafe drinking water and inadequate sanitation transmit deadly waterborne diseases like malaria (1.2 million deaths/year) and diarrhea (1.8 million deaths/year); 90 percent of the victims are children under five (World Health Organization, 2004).

The news is not all bad, however: in the past decade, people with access to improved water supplies increased from 4.1 billion (79 percent) in 1990 to 4.9 billion (82 percent) in 2000, largely due to better national water policies, river basin cooperation, and more coordinated donor policies (UNEP, 2002). River basin cooperation may have also prevented conflict; scarce water resources can be a source of tension, but, as demonstrated by the Nile Basin Initiative, agreements to manage basins can improve relations.[4]

Unfortunately, the oceans are not improving. Pressure on the coastal zones constantly increases: more than 40 percent of the world's population now lives within 100 kilometers of the coast (WRI, 2000). Twenty-eight percent of the world's most important fisheries are depleted or overexploited, putting at risk the one billion people who rely on fish as their primary protein source. Overfishing by locals and by worldwide fleets "vacuuming the seas" can lead

Clearly, the new model of development—one that could ensure environmental security—has been put on the back burner by the hostilities in Iraq and the war on terrorism.

to conflicts; the UN recorded more than 100 disputes over fish in 1997 (Brown, Gardner, & Halweil, 1999).

In addition, global climate change could exacerbate the negative effects of all of these problems, increasing desertification, land degradation, coral reef dieback, and flooding and other extreme weather events (UNEP, 2002). And despite the naysayers, climate change becomes more and more likely; in 2004, scientists at Hawaii's Mauna Loa Observatory announced that carbon dioxide had reached record-high levels after growing at an accelerated pace during the previous year (Associated Press, 2004).

In all, despite some scattered improvements, the environment has grown more fragile almost everywhere, as the world's population continues to increase and the AIDS pandemic devastates the most economically active age group in many African countries.

The stage is set for increased poverty and misery. If we continue with business as usual, conflicts over resources can only become more severe. Even before we factor in the ethnic and social conflicts, youth unemployment, and social disintegration that make parts of Asia, South America, and the Middle East rich breeding grounds for terrorism, we can diagnose the patient with a dangerous case of environmental insecurity. The ethnic cleansing in Darfur is a perfect example. Militias have killed thousands of people, chasing 1.65 million from their homes to risk death from starvation and dirty water (United Nations, 2004). Why? Can it be partly because the region may have oil deposits that the central government wishes to exploit?

The Cure

The promise of the mid-1990s, when many governments, NGOs, and some enlightened businesses supported the goals of environmental security and sustainable development, has faded in the face of more proximate, pressing security concerns after September 11. The war on terrorism has preempted the international agenda and diverted attention and funds away from constructive political processes designed to assist developing countries achieve a better quality of life, like the Monterrey Commitments, MDGs, Johannesburg, and the Doha round. So what positive action is being taken?

United Nations

In 2001, Kofi Annan defined four burning issues that must be confronted in order to achieve a world in which terrorism cannot flourish: poverty, HIV/AIDS, conflict prevention, and sustainability (United Nations, 2001). To further this work, he charged a High-Level Panel on Threats, Challenges, and Change with examining not only the traditional "high" foreign policy concerns (war and peace and the UN's role), but also addressing these "soft" security issues.[5] Although the highest levels of the UN have validated environmental security and are prepared to address it, these admirable efforts are hampered by the persistence of institutional barriers to cross-agency cooperation and anemic exercise of political will by member governments, not to mention the usual chronic lack of funds.[6]

European Union

The European Union continues to take some progressive steps towards curing the human-induced stresses plaguing our planet. What is it doing to protect us from the long-term threats posed by environmental degradation and unsustainable development, and where should it focus during the next 10 years?

"With the introduction of the euro, the biggest enlargement in the history of European integration, and the adoption of a Constitution for Europe, we have united a continent once riven by conflicts, both military and ideological," announced President Romano Prodi (European Commission, 2004a). "What we have achieved is a Union that promises opportunities and security for its people and a strong voice worldwide. Our proposals are concrete, cost-effective, and timely: now the EU has to live up to its promises." That, of course, is the difficult bit.

The EU is heading in the right direction, at least according to its stated principles. The European Community was formed to prevent conflict, build a joint economy, and improve its citizens' quality of life. The European Constitution, signed in October 2004, encourages peace, security, and a sustainable economy, not only for Europe but also the world: "The Union shall work for sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and with a high level of protection and improvement of the quality of the environment… It shall contribute to peace, security, [and] the sustainable development of the Earth" (Title I, article I-3).

In addition, the EU's recently adopted security strategy, titled *A secure Europe in a better world* (2003), recognizes that security is essential for development and acknowledges the roles played by environmental factors in cycles of conflict:

> Security is a precondition of development. Conflict not only destroys infrastructure, including social infrastructure; it also encourages criminality, deters investment and makes normal economic activity impossible. A number of countries and regions are caught in a cycle of conflict, insecurity and poverty. Competition for natural resources—notably water—which will be aggravated by global warming over the next decades, is likely to create further turbulence and migratory movements in various regions. (pages 2-3).

Besides acknowledging the problems of environmental insecurity in Europe and worldwide, the EU pledges to use its policies—and its resources—to address the world's crises. "As a union of 25 states with over 450 million people producing a quarter of the world's Gross National Product (GNP), and with a wide range of instruments at its disposal, the European Union is inevitably a global player….Europe should be ready to share in the responsibility for global security and in building a better world" (2003, page 1).

But Europe must get its own house in order first. The EU Strategy for Sustainable Development, adopted in 2001 and currently being updated, requires integrating environment into its policies (e.g., trade, aid, fisheries, and agriculture): "[I]n the long term, economic growth, social cohesion, and environmental protection must go hand in hand" (Commission of the European Communities, 2001, page 2). In the recent Doha round negotiations, the EU made concessions that should make the market for developing countries' agricultural exports freer and fairer (European Commission, 2004b). The EU must do more to eliminate damaging subsidies, particularly in agriculture, in order to ensure environmental security at home and abroad. And more is being done: the fisheries policy, for example, is undergoing a thorough overhaul to make it less destructive not only within EU waters, but also worldwide (Commission of the European Communities, 2001).

The EU is the world's largest donor of official development assistance, contributing more than half of OECD's total aid—$29.9 billion out of $58.3 billion in 2002 (OECD, 2003). It has made considerable efforts to upgrade its development policy, although several Member States are struggling to increase their contribution. The EU also brought forward at Johannesburg two initiatives on water and energy supply that seek to ensure greater security for the developing world, and I hope the new commission will take them forward energetically. The EU's Water for Life initiative has made progress, drawing up plans for four regions and establishing a special water facility with an initial grant of 500 million euro in summer 2004.[7]

The EU should promote environmental security throughout Europe, including its direct neighbors. While the old saw asserts that Europe is an economic giant but a political pygmy, the new Member States and the new European Constitution offer the opportunity for the EU to become a much stronger force for peace and security worldwide.

United States

Will the United States complement these efforts? Its role is pivotal, and suffice it to say that Americans have had quite enough of Europeans telling them what they should do (and we are well aware that we cannot do it without you). Fortunately, plenty of Americans continue to push the cause of environmental security (for example, see Jared Diamond's commentary in this issue). Yale's John Lewis Gaddis has characterized the current administration's strategy as hegemony, preemption, and unilateralism (PBS, 2003). According to the distinguished 9/11 Commission, we need cooperation, enlightened aid (particularly for Muslim countries), and a return to multilateralism (National Commission on Terrorist Attacks upon the United States, 2004). The United States should deploy such strategies, as it did at the end of World War II and during the Cold War. But this time, it should also ensure that they are sustainable, taking into account all of Kofi Annan's burning issues, to ensure a more complete security at all levels: global, national, human, and environmental. John F. Kennedy's words ring as true today as in 1960: "Today our concern must be with that future. For the world is changing. The old era is ending. The old ways will not do."[8]

Although the highest levels of the UN have validated environmental security and are prepared to address it, these admirable efforts are hampered by the persistence of institutional barriers to cross-agency cooperation and anemic exercise of political will by member governments, not to mention the usual chronic lack of funds.

Conclusion

When ECSP was launched in 1994, we could reasonably have predicted that we would be much closer to achieving environmental security (and sustainable development) than we are today. While the developed countries may have adopted some good strategies at home, they have mostly missed the opportunity offered by the post-Rio consensus to promote sustainability and equity worldwide. We have sown the wind, and now we reap the whirlwind (and other extreme weather events!). Terrorism can only thrive when the majority of the world's population lacks the basic necessities of life: clean water, enough food, fertile land, and forests. We have the tools to achieve the MDGs and equity for all. Their environmental security is our security, so we must challenge all our governments to implement the aid, trade, and domestic policies so urgently needed to create a just world.

Notes

1. For more information on the Monterrey Commitments, see http://www.worldbank.org/prospects/gdf2003/gdf_ch06_web.pdf.

2. For the current status of the Doha round, see the International Institute for Sustainable Development's Doha Round Briefing Series at http://www.iisd.org/trade/wto/doha_briefing.asp, and also the World Trade Organization's overview of current agricultural negotiations at http://www.wto.org/english/tratop_e/agric_e/negoti_e.htm.

3. See, e.g., "DRC: IRIN Focus on Hema-Lendu conflict" (1999).

4. See "Water, Conflict, and Cooperation" by Alexander Carius, Geoffrey Dabelko, and Aaron T. Wolf in this issue for more on shared water resources.

5. For more on the High-Level Panel, see "The United Nations and Environmental Security: Recommendations for the Secretary-General's High-Level Panel on Threats, Challenges, and Change" in this issue.

6.The United States contributed 22 percent of the

UN's regular budget for 2003, whereas the European Union contributed 38 percent and Japan 20 percent (European Union, 2004a).

7. For more information on the Water for Life initiative, see http://europa.eu.int/comm/research/water-initiative/index_en.html.

8. For a transcript and recording of Senator John F. Kennedy accepting the Democratic Party nomination for the Presidency of the United States (July 15, 1960), see http://www.jfklibrary.org/j071560.htm

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From Environmental Peacemaking to Environmental Peacekeeping

ERIKA WEINTHAL

Nowhere is the notion that water causes conflict more widespread than in the Middle East. Former Secretary General of the United Nations Boutros Boutros Ghali warned in 1985, "The next war in the Middle East will be fought over water, not politics" (Vesilind, 1993, page 53). More than any other environmental resource, water is used to bolster claims that environmental degradation and resource scarcity produce conflict (e.g., Homer-Dixon, 1994).[1] Over the last few decades, scholars have sought to identify how competition over fresh water leads to interstate conflict (Gleick, 1993; Ohlsson, 1995; Elhance, 1999).

The emphasis on conflict, however, has overshadowed the less provocative—but no less major—premise that water is more likely to induce cooperation than conflict, even in arid regions with scarce or unevenly distributed freshwater supplies (Wolf, 1998). For example, contrary to predictions that water might spark interstate conflict in post-Soviet Central Asia (Panarin, 1994; Smith, 1995), water motivated *cooperation* among the five newly independent states of Kyrgyzstan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan (Weinthal, 2002). And despite all the hype about the Middle East's incipient water wars (Gleick, 1994; Starr, 1991), Israeli and Palestinian water managers continued to cooperate—even as other forms of economic and security cooperation collapsed—after the second intifada began in 2000 (Rinat, 2001).

While conflict and violence still dominate the environmental security discourse, new research focusing on environmental peacemaking has challenged the assumed link to conflict. Conca & Dabelko (2002) suggest, "Environmental cooperation can be an effective general catalyst for reducing tensions, broadening cooperation, fostering demilitarization, and promoting peace" (page 9). While it is still not clear if environmental cooperation can lead directly to peace, we should explore the environment's potential as a peacemaking tool in this increasingly unstable and conflictual world. During the next decade, three areas deserve our attention:

- Are water resources more likely than other resources to provoke conflict and/or engender peace? Intentionally or not, the essays in *Environmental Peacemaking* (Conca & Dabelko, 2002) largely focus on water. Are other environmental resources also positioned to foster peace?
- Most of the security threats that emerged in the 1990s are intrastate threats (e.g. civil war, genocide, political instability, and state collapse), suggesting that we should focus on this lower level of analysis. Could we use the environment as a peacemaking tool *within* states and along tenuous border regions?
- Can researchers, policymakers, and practitioners move away from conflict scenarios and environmental peace*making* towards environmental peace*keeping*? To date, the environment has largely been promoted as a mechanism to mitigate hostilities and therefore bring about peace; yet, the environment might also offer opportunities in the post-conflict resolution phase to sustain a fragile peace and prevent a return to violence.

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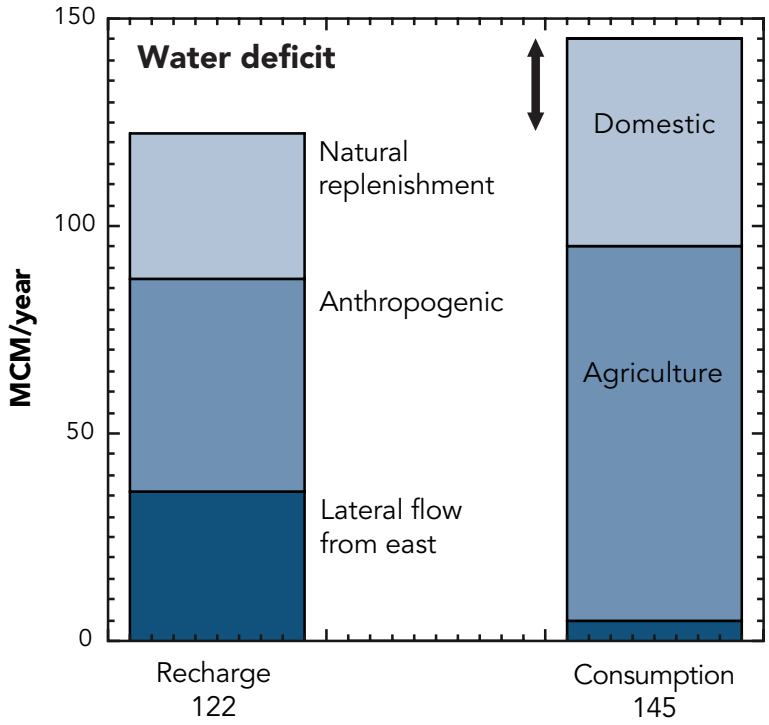
The Water Crisis in the Gaza Strip



Source: Data from UNEP (2003)

Central Asia and the Aral Sea: Interstate Cooperation but Local Conflict

International donors (e.g., the World Bank, the European Union's Tacis Programme, and U.S. Agency for International Development) sought to mitigate threats to regional stability in the Aral Sea Basin following the Soviet Union's collapse in 1991, given the region's small-scale, violent conflicts over land and water scarcity in 1989-1990. Due to this proactive intervention, the newly independent states established new institutions to jointly manage and protect the basin's water bodies (see Weinthal, 2002; Micklin, 2000). The prospects for acute interstate conflict faded, and the Central Asian states currently maintain a low level of formal cooperation through the 1998 agreement on water and energy use in the Syr Darya Basin. Nevertheless, local water disputes (especially along the Kyrgyzstan-Tajikistan border and in the Fergana Valley between Kyrgyzstan and Uzbekistan) are still unresolved, with no real movement in either direction (International Crisis Group, 2002).

The locus of potential conflict and political instability shifted from the interstate to the local level for a number of reasons:

- Early donor programs trying to instigate cooperation in the Aral Sea Basin failed to build local capacity; stakeholders like local and international NGOs, for example, were initially excluded from large-scale donor projects;
- Large multilateral organizations have directed aid primarily to large-scale infrastructure projects, such as a drainage collector in the Amu Darya Basin, rather than smaller-scale projects in densely populated areas and border regions;[2] and
- The first phase of donor assistance sought to reform the water and energy sectors at the expense of cotton farming, which consumes the most water in the region. Cotton cultivation is not only the backbone of Central Asian economies, but also a mechanism for social and political control through which governments exchange social protection for political acquiescence (Weinthal, 2002).

The case of the Aral Sea Basin underscores the need for future research on environmental peacemaking at the subnational level and in border regions. While peacemaking may start at the interstate level, conflicts may fester at the intrastate level, unless local stakeholders are included in the efforts to build peace. To use the environment as a vehicle for building trust and cooperation, policymakers should invest in building local capacity, by strengthening local water user associations and civil society groups, for example. Moreover, if policymakers and practitioners want to ensure that conflict will not erupt at both the interstate and intrastate levels, they must understand the broader social and political context. Water-sharing problems at both levels cannot be effectively resolved

unless the Central Asian states diversify their agricultural economies by turning away from water-intensive crops like cotton. To encourage this diversification, donors must push for political and economic reforms that would support family farms at the local level.

Lastly, researchers and practitioners should assess whether they could use other environmental issues, besides water, to reduce interstate and intrastate conflicts. Water has overshadowed efforts to combat desertification and the loss of biodiversity in Central Asia. Peace parks along the border of Turkmenistan and Uzbekistan, for example, might provide innovative opportunities for local communities to work together—both within states and across borders—to promote biodiversity, regional cooperation, and economic development.

The Middle East: Peacekeeping

Water cooperation in the Middle East—unlike Central Asia—has proved daunting because political problems dwarf the region's environmental concerns. Conventional wisdom, which holds that larger political issues must be resolved for cooperation to emerge, exacerbates pessimism about the potential for environmental peacemaking in the region (see Lowi, 1993). Yet, once the hostile parties embark upon the road to peace, environmental issues could be used to sustain the journey. The Middle East could be a striking example of moving from environmental peacemaking to environmental *peacekeeping*. While the environment will not bring Israel and the Palestinian Authority to the bargaining table, it might provide one of the few opportunities to foster interdependence and hence sustain peaceful relations once the two parties agree to end the conflict.

After Kuwait, the Gaza Strip is the most "water poor" region in the world, with only 52 cubic meters available per person each year (International Atomic Energy Agency, 2003). It is also one of the most densely populated areas in the world: over 1.3 million Palestinians are crowded into approximately 400 square kilometers (U.S. Bureau of the Census, 2004). The Gaza Strip faces a mounting water crisis; water used in the Gaza Strip is not replenished, and groundwater quality has severely deteriorated as saline water rapidly replaces fresh water.

Resolving this crisis will require Israel's cooperation, since the Gaza Strip shares the southern Mediterranean Coastal aquifer with its upstream neighbor. Although the poor water quality is caused by intrusions of natural saline groundwater, overuse in the Gaza Strip exacerbates the problem by lowering the water table and increasing the flow rate of natural saline water from Israel to the Gaza Strip (Vengosh et al., forthcoming). Even though its upstream consumption does not contribute to the aquifer's deterioration, Israel could help mitigate salinity downstream by increasing pumping along the border region, which would reduce the flow of natural saline water, while the Palestinians simultaneously limit or reduce pumping within the Gaza Strip (Weinthal et al., in press). The international community should encourage Israel and the Palestinian Authority to develop a joint management plan to implement this solution. With international assistance, desalination plants along the Israeli-Gaza Strip border could treat the groundwater pumped by Israel and transport it to the Gaza Strip.

This mutually beneficial plan would fortify relations, especially after political borders are established to separate the two parties. The Palestinian Authority would obtain another source of drinking water for its growing population and remediate the Gaza Strip's salinity problem. For Israel, the groundwater transfer could serve as a goodwill gesture. While the upstream-downstream scenario and the region's political tension would argue against cooperation, a joint water management plan to solve the Gaza Strip's water crisis could instead help keep the peace after an Israeli withdrawal.

Conclusion: Local Environmental Peacemaking and International Peacekeeping

Environmental peacemaking promises to transform our understanding of the link between the

Israeli and Palestinian water managers continued to cooperate—even as other forms of economic and security cooperation collapsed—after the second intifada began in 2000.

While peacemaking may start at the interstate level, conflicts may fester at the intrastate level, unless local stakeholders are included in the efforts to build peace.

environment and conflict. However, two major arenas remain relatively unexplored: using the environment to prevent local conflicts and to maintain peace. Researchers and policymakers seeking to expand environmental peacemaking over the next decade should pursue the following agenda:

- Explore using other environmental resources—not just water—as a source of cooperation (e.g., peace parks);
- Focus more on intrastate—not just interstate—conflicts;
- Donor programs should pay attention to the social and political context and encourage local capacity building instead of simply emphasizing technical cooperation; and
- Recognize that conflict resolution also requires maintaining peace. Therefore, environmental peacemakers should conceptualize a new approach—environmental peacekeeping.

Notes

1. For a critique of the environmental security literature focusing on conflict, see Peluso and Watts (2001).

2. After activists criticized this approach, the international community invested in some local projects, such as supporting water user associations and retrofitting local canals.

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Demographic Security Comes of Age

RICHARD P. CINCOTTA

On the day I began to write this essay, *The New York Times* reported that Pakistan planned to bulldoze all Afghan refugee camps within three miles of its northwest border. U.S. intelligence satellites had tracked cross-border movements to and from these settlements, and Pakistani Army units repeatedly engaged insurgents in the area (Gall, 2004). Another article discussed international opposition to the wall Israel is constructing on the West Bank—ostensibly to eliminate terrorist incursions, but in practice to exclude and isolate the rapidly growing Palestinian population (Hoge, 2004). Two other accounts attracted my attention: a report on U.S. foreign aid for Haiti, which has the youngest and fasting growing population in the Western Hemisphere, and an analysis of factional political violence in the Gaza Strip—a tiny enclave that hosts one of the youngest and fastest growing populations in Asia.

What do these articles have in common? Each focused on an event with implications for national or global security and had an unmistakable demographic component, and therefore, lies within the domain of "demographic security." Demographic security addresses the security aspects of:

- A population's size, age structure, geographic distribution, or ethnic composition; and
- Changes in these demographic conditions and interactions among them, including migration, population growth, shifts in the age structure, and changing location and proportion of ethnic and religious groups.

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Demographic security issues are on many multilateral agendas, as demonstrated by the European Union's concern with its aging native population and its growing Muslim communities (Savage, 2004), and the UN's focus on poverty, trade in light weapons, and HIV transmission in new cities along the truck routes winding through Africa (Hope, 1998; UN-Habitat, 2003). These seemingly hodgepodge issues are connected by a common theoretical thread: the "demographic transition," or the process by which a population characterized by relatively short lives and large families is transformed into a population composed principally of people living longer lives and having small families (Figure 1). In our 2003 monograph *The Security Demographic: Population and Civil Conflict after the Cold War,* my colleagues, Robert Engelman and Daniele Anastasion, and I contend that the demographic transition is the key to understanding demographic security issues.

Civil Strife and Soft Landings

To test this notion, we compared demographic data from the United Nations Population Division (UNPD, 2003) and the Uppsala Conflict Data Project's global database.[1] We focused only on *civil conflicts*—revolutions, ethnic and religious insurgencies, state-sponsored violence, and domestic terrorism. This broad class of intrastate conflicts nearly tripled in annual prevalence between 1950 and 1992, and their average duration has grown since the 1980s (Collier, Hoeffler, & Söderbom, 2001).

After filtering out persistent and recurring conflicts, we found countries in the early and middle stages of the demographic transition—with high birth and death rates—much more likely to experience an outbreak of new civil conflict than those farther along in the transi-

tion (i.e., with lower birth and death rates). The trend held up through the 1970s and 1980s, as well as the post-Cold War 1990s, suggesting that superpower funding, training, and military hardware may have influenced the nature and intensity of Cold War-era civil conflicts more than developing states' vulnerability to them (see Figure 2).

Our research also shows that the statistical likelihood of civil conflict decreased consistently as countries' birth rates declined, suggesting that for most states, the demographic transition promotes a "soft landing." Significantly, a soft landing is not an inherent property of the democratic transition, which features instabilities midway along its path. Partial democracies—states offering an institutional admixture of civil freedoms and authoritarian constraints—are more statistically vulnerable to state failure than either fully democratic or wholly authoritarian regimes (Esty et al., 1999).

Some developing countries appear to risk similar instabilities midway through their transition to an open free-market economy. In a series of analytical case studies, Amy Chua (2002) has demonstrated that IMF-leveraged liberalization policies unwittingly provide market-savvy ethnic minorities with opportunities to gain further control over capital. Coupled with fast-paced democratic reforms, increased inequalities fuel ethnic animosities, boost popular support for nationalist political movements and, in some cases, act as a springboard for demagogues to attain political office (Chua, 2002).

The security dynamics of these transitions lend credence to the hypothesis that early-phase states—including Iraq, Pakistan, and Nigeria—might lower their risk of civil conflict during their transitions to democracy and free markets if they advanced through the demographic transition. This thesis explains the substantial democratic, social, and economic progress of certain East Asian states (particularly South Korea, Taiwan, Thailand, Singapore, and Malaysia), where significant declines in fertility preceded substantial and successful democratic and free-market reforms.

Demographic Risk Factors

Researchers have found at least eight demographic topics associated with political instability or conflict. These are:

High proportion of young adults ages 15 to 29 years—a "youth bulge"—among the working-age population. In the 1990s, states with a large youth bulge were nearly 2.5 times as likely to experience an outbreak of civil conflict as other states (Cincotta, Engelman, & Anastasion, 2003).[2] York University researchers Christian Mesquida and Neil Weiner (1996, 1999) have also demonstrated that the intensity of recent conflict in war-torn regions is positively correlated to the proportion of young adults in the adult population.

Rapid urban population growth. During the 1990s, countries with a high rate of urban population growth were about twice as likely as other states to experience an outbreak of civil conflict. On the ground, researchers and policymakers may find it difficult to separate urban growth and the youth bulge. In countries where agriculture is no longer promising, young adults typically migrate to urban centers in search of education, employment, and opportunities for immigration. Thus, urban centers, where political protest is more easily organized, tend to have unusually high proportions of young adults in their working-age population (Fuller & Pitts, 1990).

Low levels of per capita cropland and/or fresh water. Cross-country statistical evidence does not demonstrate that low per capita supplies of either fresh water or cropland increase the risk of full-fledged civil conflict on their own. Nonetheless, the added risks to states under stress could be underrated. For example, in the 1990s, about half of all countries with high proportions of young adults *and* low levels of one or both of these critical resources experienced an outbreak of civil conflict (Cincotta et al, 2003). Leif Ohlsson (2000) has argued that scarcities of critical natural resources undermine the ability of agricultural economies to absorb labor, promoting landless poverty and thus accelerating the growth of urban slums and providing potential recruits for insurgencies.

U.S. foreign policy should improve girls' access to schooling and women's access to family planning, maternal health care, and income-generating opportunities.

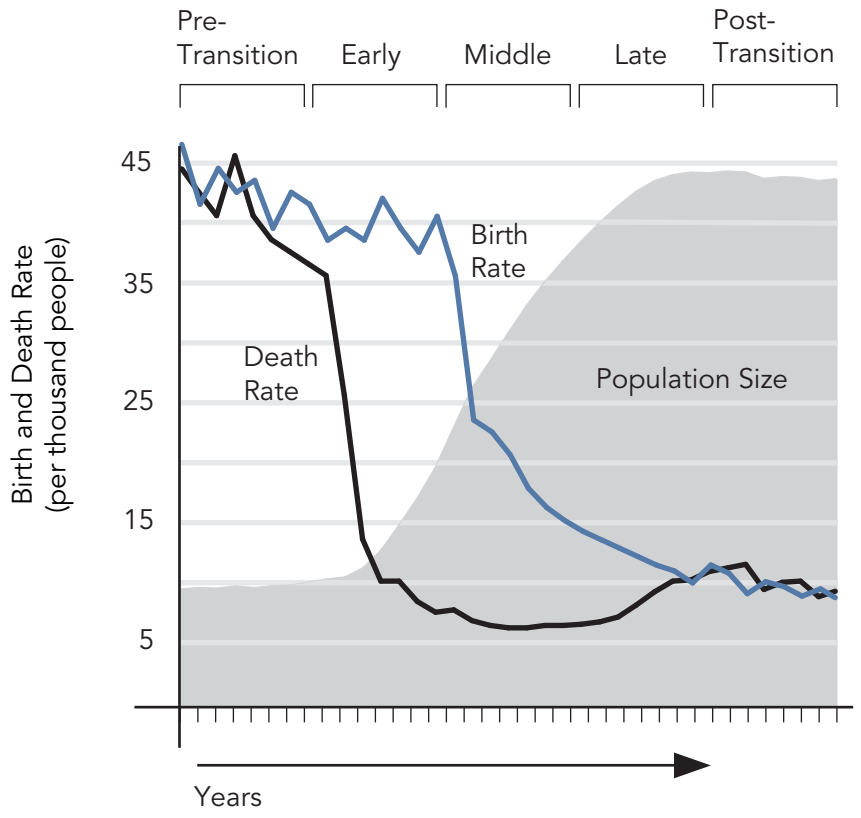

Figure 1. The demographic transition (an idealized version of which is pictured) is comprised of two components: birth rate and death rate transitions. Historically, the death rates have dropped before birth rates. Rapid population growth occurs when a gap opens up between birth and death rates. Individually, birth rate and death rate transitions have taken from 50 to 150 years to complete. Some developing countries are passing through these transitions rapidly, much faster than European or North American populations did during the 19th and early 20th centuries.
Source: Cincotta, Engelman, and Anastasion (2003)

High mortality rates among working-age adults (indicative of high rates of AIDS mortality). There is insufficient statistical evidence to link HIV/AIDS to the outbreak of conflict. Nonetheless, we should explore the arguments that point to the disease's effects: large youth bulge, the loss of key professionals, weakened military and police units, and unprecedented numbers of orphans. The future demographic impacts of HIV/AIDS are likely to exceed those of the 1980s and 1990s dramatically.

Differential growth rates among ethnic and religious groups. Tensions can arise when changes in ethnic or religious group distribution and composition (the proportions of such groups in the population) are perceived as threats to the political character, traditions, or cultural practices of another group. Tensions can also arise when groups are denied political access commensurate with their perceived share of the population. Such tensions are likely to increase in the 21st century, as ethnic populations within countries progress through the demographic transition. Unfortunately, many countries lack accurate data on ethnic composition and differential ethnic fertility and mortality rates, limiting opportunities for country analyses and cross-national comparisons.

Migration. Refugees and other cross-border migrants often evoke fears and provoke anti-immigrant tensions in host countries. While the vast majority of migrants seek only to eke out a living or assimilate, some aid insurgents or actively participate in insurgencies. Trends and policies that influence migration, ethnic relations, separatism, and assimilation warrant closer study and more accurate data.

Aging and population decline. Some economists and demographers are alarmed by the purportedly deleterious effects of aging populations on social cohesion and economic prosperity. This is uncertain terrain; industrial countries are just beginning to grapple with the challenges of shrinking workforces and growing proportions of the elderly. So far, none of the aging countries has experienced unusual economic or political instability—including Russia, where the median age has risen to 38 and population is declining by around 1 million people (0.7 percent) annually (DaVanzo & Grammich, 2001). European countries with fast-growing Muslim minorities are most concerned with the decline of the native-born population; in these states, issues of national identity, religion, and culture are at stake—and thus tend to color the discussion of population decline, aging, and security (Savage, 2004).

High sex ratios (populations where men vastly outnumber women). In their new book, political scientists Valerie Hudson and Andrea den Boer (2004) use historical accounts to make the case that populations with a high sex ratio are more vulnerable to political unrest and

civil conflict. The authors focus on contemporary China and India, where sons are strongly preferred to daughters. As in other Asian countries, public access to ultrasound technology and amniocentesis has facilitated sex-selective abortion, resulting in highly skewed sex ratios. Separating the security-related effects of skewed sex ratios from those of the youth bulge and other demographic and social phenomena may prove difficult, but this provocative thesis, although speculative, should nonetheless stimulate further research.

Demography Is Not Destiny

For those involved in foreign policy, demographic changes can be viewed most constructively as challenges and vulnerabilities to the state and its institutions—or, in some instances, as options and opportunities. For example, when jobs are scarce, a large and growing youth bulge can lead to increased discontent, crime, and political unrest. States have responded in several ways to this stress: drawing young men into the military and internal security forces, exercising repressive controls, or promoting labor out-migration to industrial countries and facilitating remittances (savings sent home by foreign workers; Ware, 2003). However, when investment-driven job growth provides educated young adults with economic and social mobility, a youth bulge could provide a large group of taxable workers for the workforce. Similarly, high rates of urbanization often produce slum housing and inadequate services, increasing the risk of crime and civil unrest. Yet, where infrastructure investment accompanies urban growth, cities are significant sources of economic growth.

The demographic future is anything but certain; demographic trends are not immutable. That said, some aspects of population dynamics are clearly more susceptible to interventions. In the recent past, policies and programs have had enormous effects on childhood mortality and fertility, particularly in East Asia and the Caribbean. Population growth and decline are not as malleable; these trends are imbued with momentum and thus difficult to reverse (save some enormous catastrophe or burst of migration) because past population dynamics have already established the size of the reproductive-age population for the next 15 to 20 years.

Next Steps for Policymakers

While the plethora of unresolved controversies and unanswered questions will no doubt drive further research in demographic security, the post-9/11 price for policy inaction and disengagement is extraordinarily high and will be measured in security crises, failed states, and lost human lives. Thus, we should ask: how can professionals in the diplomatic, military, and intelligence communities act, in a timely fashion, upon the results of demographic security research?

If our conclusions are true, then the responses are self-evident: U.S. foreign policy should improve girls' access to schooling and women's access to family planning, maternal health care, and income-generating opportunities. Improving women's status can influence social environments, help change cultural norms, and ultimately speed the demographic transition. Increasing women's participation in government, particularly in post-conflict negotiations, could help shift priorities away from armed confrontation and towards human development. The presence of high numbers of qualified women in important and visible diplomatic and military roles at home and abroad would also contribute to changing attitudes about women's roles.

To facilitate changes based on the security demographic, the national security community should make the demographic transition part of their global threat assessments and scenario exercises. Analysts should consider the security implications of trends in age structure, urban slum growth, rural landlessness, ethnic growth-rate imbalances, and other demographic factors. And, when asked to comment on the security implications of demography, analysts should remind policymakers of the programs already available in the "foreign aid toolbox"—

Early-phase states—including Iraq, Pakistan, and Nigeria—might lower their risk of civil conflict during their transitions to democracy and free markets if they advanced through the demographic transition.

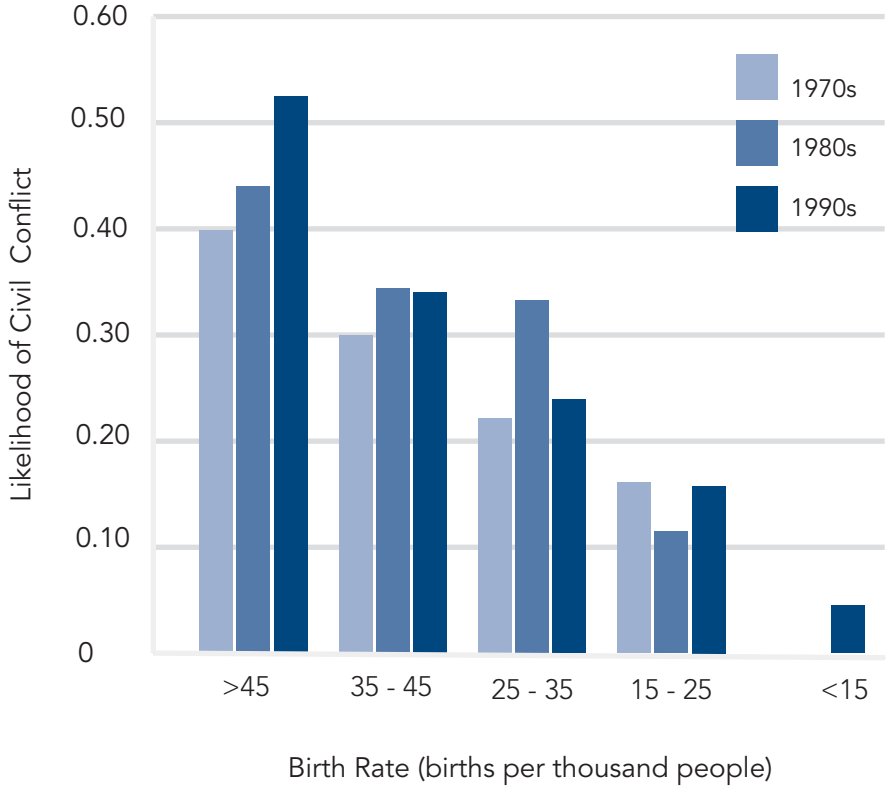

Figure 2. As countries' birth rates declined during the last three decades of the 20th century, their likelihood of civil conflict also tended to decline. While this relationship was most dramatic in the 1990s, it was also evident during the 1970s and 1980s, decades during which many civil conflicts were considered to be Cold War "proxy wars" (each side supported by one of the opposing superpowers).
Source: Cincotta, Engelman, and Anastasion (2003)

namely, voluntary family planning services and girls' education—that promote positive demographic and social change.

Globally, the demographic transition is incomplete. One-third of all countries in the world remain in the early stages, with four or more children per woman. When the northern states of India are included, this population—the most conflict-affected in the world—comprises about 1.5 billion people (UNPD, 2003). Unfortunately, the demographic stresses endured by these countries are likely to receive less and less attention as the news media focuses instead on the industrial world's demographic issues: population aging, population decline, and immigration. The significant risks of delaying progress through the demographic transition, and the decades it can take to dissipate those risks, underscore the need for donors and developing-country governments to increase financial and political support for policies and programs that lead to positive demographic changes: those that expand girls' educational opportunities, give couples the ability to choose the timing and frequency of childbirth, and increase women's participation in government and in the workplace.

Notes

1. For discussion of the database, see Gleditsch, Wallensteen, Eriksson, Sollenberg, & Strand (2002) and Wallensteen & Sollenberg (2001). To access the database, visit http://www.pcr.uu.se/research/UCDP/UCDP_toplevel.htm.

2. See also Urdal (2001), Goldstone (1991), and Moller (1967/68).

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An Agenda for Population, Health, and Environment

ROGER-MARK DE SOUZA

Earth's ecosystems and its human population are inherently connected. The fundamental relationships are fairly easy to grasp: Earth provides energy and raw materials for human activities, which in turn affect the ecosystems; damage to those environmental goods can adversely affect people's health and well-being. International attention to these linkages peaked in the 1990s, but innovative community-based initiatives continue to address them. This article explores population, health, and environment (PHE) connections, identifying our accomplishments, current challenges, and priorities.

What have we accomplished?

Around the world, many programs address PHE connections by incorporating reproductive health into environmental protection programs or vice versa. Local conservation groups, national governments, and international organizations are using integrated interventions in the world's biodiversity hotspots and tropical wildernesses. These new approaches integrate family planning and conservation activities in community-based projects, through which ecologists, health specialists, and community development experts link factors like environmental stress, fertility, migration, women's health, women's educational status, and economic decisions.[1]

Local communities welcome integrated interventions because they reflect the reality of people's lives. Water shortages and unclean water affect their children's health. Areas of high biodiversity often attract migrants, increasing the impact on natural resources. Unchecked coastal development may pollute coastal waters, damage fisheries, and ultimately reduce economic opportunities, food security, human health, and marine resources.

When local communities are empowered, they can sometimes convince decision-makers to address these issues in an integrated manner. Some institutions, such as government committees charged with integrating PHE concerns into national development strategies, promote sustainable development and encourage collaboration across ministries and government departments. As a result, policies to solve broad problems like food shortages may address a wide range of issues, such as migration, intensified industrialization, and food imports. Short-term solutions for a single sector are unlikely to be effective over the long term.

Some donors are supporting integrated work. In the United States, PHE funding increased in the late 1990s, but this growth has been fueled by only a handful of foundations, such as the David and Lucile Packard Foundation and the Compton Foundation, and public sources like the United States Agency for International Development and the National Institutes of Health. The total amount of integrated funding, however, is only a small percentage of overall population and environmental funding (Gibbs, 2003).

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New models and technology address PHE linkages. Technological advances have enabled farmers to grow more food on less land, cities to clean wastewater, and nations to protect areas of significant biodiversity. In India, for example, communities have used new technologies and community mobilization to convert open-access natural resources into community-controlled resources, thereby increasing the residents' incomes from forest products and protecting the area's biodiversity (McNeely & Scherr, 2003, pages 46-47, 234). In addition, research-based programs and policies have enhanced environmental protection and improved human well-being. Examples include Zimbabwe's experience decentralizing wildlife user rights in the CAMPFIRE program, which was adopted in other Southern African countries, and the National Biodiversity Institute (INBio) of Costa Rica's bioprospecting initiative, which was adapted by projects in Mexico, Indonesia, and the Philippines (World Resources Institute, 1997).

Why have we not done more?

Examining, designing, implementing, and funding integrated work is a continuing challenge. A common stumbling block for researchers, program managers, local communities, and donors is how to "do integration." PHE scholars and practitioners have not settled on a unifying methodology. Program documentation tends to target the funding agency and should be disseminated broadly so that other program managers can determine when to apply an integrated approach. Similarly, decision-makers grapple with how to apply integrated policies across sectors, budgets, and regulations. And donors remain largely wedded to traditional sectoral funding approaches, only occasionally dabbling in cross-sectoral experiments.

The complexity of these linkages clouds the appropriate intervention points. Intuitively, linking population, health, and environment issues makes sense. This link is less clear, however, when other variables, such as technology, culture, economics, or politics, come into play. What kind of interventions will have the greatest impact? If we want to preserve old growth forests, should we fight corruption that awards favorable concessions to rapacious logging companies, or should we prevent migrant workers from moving in? These interventions are difficult to evaluate, partly due to poor-quality data on the factors driving change.

Collaboration is complicated by major differences in paradigms, assumptions, and definitions. Reconciling different (and sometimes contradictory) conceptual approaches is complicated by divergent methodologies and the conflicting interests of individuals, communities, organizations, and governments.

Business as usual often stymies collaboration. Some organizations are reluctant to add a program in another sector, like a conservation organization providing family planning services, even if it would maximize their impact. They do not have the resources, expertise, or staff capacity, and they feel that such efforts would divert them from their stated mission. Similarly, donors fund projects according to specific program areas, and when funding is tight, they fall back on more established programs. At the community level, integrated programs may be constrained by cultural and religious norms, especially when addressing sensitive issues like the role of women in natural resource management or voluntary modern family planning methods. Traditional practices, cultural differences, or powerful interests may block integrated efforts to change the status quo.

The exclusion of "influentials" impedes implementation. Influentials (e.g., journalists, important community members, and political, civic, and religious leaders) can shape policy and influence attitudes and behaviors. When influentials are excluded from a research project or program, they may not support its recommendations. Journalists, for example, need simple ways to explain the demographic and health dimensions of environmental stories, a news "peg" that can sell the story to their editors, and access to information and experts. If the media are included in projects and given opportunities to report, they could help bring PHE issues to

A common stumbling block for researchers, program managers, local communities, and donors is how to "do integration."

the attention of policymakers and the public. If included, policymakers may also better understand the applicability—as well as the legal, budgetary, and regulatory implications—of research results.

Messages do not clearly illustrate how integration helps constituents. Researchers, advocates, and program staff need to develop simple, evidence-based, and compelling messages that convey the importance of integrated programs. Such messages could help, for example, a conservation organization understand how addressing human migration furthers its conservation goals, an adolescent reproductive health program justify adding a community conservation program, or a policymaker recognize that food security and economic opportunities increase when community members voluntarily choose to space their children and preserve mangrove forests.

PHE data are difficult to find and compare across sectors and scales. Demographic and ecological data are not collected at comparable geographic scales. Demographic surveys are usually conducted within a political region, such as a district or country, whereas environmental data cover a particular ecosystem or landscape, often crossing political boundaries. In addition, it is difficult to find data at local levels, such as data on migration in particular communities.

Wide-ranging project indicators inhibit developing common thresholds and standards. Determining how much to invest without a standard method for measuring and evaluating success can be difficult. Similarly, without a common set of approaches for implementing integrated programs, managers face a difficult question: should they partner with other groups to complement their skills or develop integrated expertise within their staff? Should all of a program's interventions have population, health, and environment dimensions or should separate departments set parallel population, health, and environment goals?

Limited timeframes and uncertainties inhibit political will. Demographic and environmental change can be slow, uncertain, and imperceptible over the short term. Researchers are refining methodologies, field practitioners are testing approaches, and advocates are building a body of evidence. However, this process could take many years, and this timeframe is out of sync with electoral terms, funding cycles, and immediate needs.

What should we do now?

Increase understanding of PHE linkages and their impacts. We need to reach policymakers, researchers, and the public by effectively disseminating critical PHE information. We must:

- Determine the information needed by policymakers and communities to make decisions and provide it in formats suitable for non-technical audiences;
- Identify those aspects of PHE, related to urgent development needs, that are most applicable for research and policy;
- Initiate and coordinate research projects that test methodologies, address topics relevant to current policies, and can influence policy deliberations and decisions; and
- Develop indicators that can measure success and demonstrate the value added by taking an integrated (instead of a single-sector) approach.

Strengthen advocates' abilities to focus policy attention on key PHE issues. To build momentum for PHE integration, advocates must trumpet success stories and express its advantages in terms that appeal to constituents. We need to:

- Explain to environmental organizations why population is key to their work, and explain to population organizations how environmental analysis furthers their objectives;
- Convince donors to increase and sustain funding for PHE research, programs, and advocacy by tying PHE interventions to development priorities, garnering political will, demonstrating tangible benefits to local communities, and encouraging foundations to fill funding gaps left by government and bilateral aid;

Table: Challenges in addressing population, health, and environment linkages

	Category of Challenges			
Audience	**Methodology**	**Collaboration**	**Communication**	**Measurement**
Researchers	Limited theoretical literature	No incentive to collaborate across disciplines	End users (e.g., communities and policymakers) are not included	Data are not available and/or comparable across sectors and scales
Program managers and staff	Approaches are not documented	Lack of cross-sectoral partnerships and staff capacity; possible "mission drift"	Lack of integrated program messages and coordination across departments and programs	Lack of monitoring and evaluation indicators
Communities	Appropriate points of entry are not identified	Cultural and religious traditions (among others) discourage change	Integration's relevance to community priorities is not demonstrated	Data are not available at appropriate scale
Donors	Long-standing traditional divisions	Lack of coordination within donor agencies and among donors	Integration is not linked to legislative priorities	Return on investment is not measured
Policymakers	Lack of policy examples	Accountability is spread across budgets and spheres of responsibility	Integration is not linked to constituents' priorities	Short political timeframes make integration politically unpalatable and infeasible

- Conduct expert seminars for journalists, increase their understanding of technical issues, and suggest investigative techniques and leads for covering PHE linkages; and
- Give policymakers examples of approaches they can use and frame policy issues in terms of constituents' needs.

Increase capacity for cross-sectoral programming and funding by providing technical assistance. We must:

- Develop materials (e.g., workshops, manuals, toolkits) to help key actors, such as wildlife conservationists, health promoters, and coastal managers, integrate demographic analysis into environmental decision-making and programming;
- Help population specialists at the regional and country level access state-of-the-art information and provide methodological advice for addressing these issues in policy work and population-development programs;
- Share tools and approaches, such as project design and evaluation methods;
- Explore ways for natural and social scientists to contribute to field-based programming; and
- Improve reproductive health services by integrating population and environment programming.

To build momentum for PHE integration, advocates must trumpet success stories and express its advantages in terms that appeal to constituents.

Build expertise to contribute to policy decisions. Field practitioners should learn to mobilize and train others, advocate policy change, and communicate effectively. We need to:

- Conduct training sessions to help researchers and advocates communicate with policymakers;
- Create, support, and strengthen local PHE networks and build coalitions; and
- Develop approaches and materials that use environmental data to advocate for population and reproductive health issues.

Putting Lessons to Work

In 2003, with support from the Compton Foundation, Population Reference Bureau (PRB) conducted a PHE case study, "Generating Political Will for Population, Health, and Environment." The case study summarized an eight-year process that led to the adoption of gender equity policies and action plans in the environmental agencies of every government in Mesoamerica (Central America and Mexico). PRB reviewed project documents, surveyed and interviewed project staff, and carried out field-based observations.

The case study documented policy successes (policy changes, allocation of funds, workplans, ministerial declarations); identified factors that influenced the policy agenda, such as donor interest, international agreements, and political events; examined the role of key groups or policy champions, including NGOs like IUCN-The World Conservation Union; and observed the importance of disseminating information—through media reports, policy briefings, research reports, presentations, ministry documents, and site visits—to garnering government attention. The results demonstrated that the actions described in this article can mobilize political will on PHE issues.

Project partners set the policy agenda by framing the issues so that government bodies would be receptive. In this case, the links between gender and the environment were presented as a human rights issue. This was important for some countries, such as Costa Rica and El Salvador, as it highlighted international conventions to which their governments had subscribed.

International actors and partners played an important role by focusing attention on gender and environment. Donors from the Netherlands, the Canadian International Development Agency, and the World Bank worked with civil society for over four years on a number of collaborative projects. As a result, governments recognized the importance of gender and environment integration and started working with civil society actors on these issues.

Information and indicators helped create awareness. By presenting results from collaborative projects, civil society helped show policymakers how gender differentials affect environmental policies and programs.

Influentials, particularly policymakers, were involved from the beginning. NGOs worked closely with governments from the start: IUCN, for example, is an international organization whose membership is composed of governments and NGOs, and the Institute of Mexican Women, an influential NGO coalition, has worked closely with the Mexican government for many years.

Influential coalitions kept PHE issues on the policy agenda long enough. IUCN had already been working on gender and environment issues for five years when it was approached by government agencies. A large network of agencies, champions, academic institutions, NGO coalitions, a regional policy commission, and donors kept the gender and environment connection on the agenda long enough for policy to change. In all, it took eight years to convince the governments to incorporate gender into their environmental mandate.

These findings confirm that PHE experts can use a systematic process to influence policy:

- Raise awareness through targeted information dissemination;
- Set the agenda by getting policymakers to

recognize the importance of the issue; and
- Build coalitions by working with a variety of actors to keep the issue on the policy agenda long enough for change to occur.

This process may enable PHE programs to prioritize activities, establish benchmarks and indicators of success, and determine if efforts are sustainable.

Conclusion

When we link population policy and reproductive health interventions with environmental management, we improve our health, our economy, and our children's future. Researchers can, and must, educate policymakers and the public. Informed policymakers can address these complex long-term issues by implementing policies that balance far-reaching benefits with short-term costs. Local communities can empower themselves and effectively manage their environment, while simultaneously improving education, primary health care, livelihood opportunities, and the status of women. Ultimately, these approaches will help us match development needs with policy interventions in a rapidly changing world.

Notes

1. Close to 50 of these projects have been documented. See Riesenberger (2002, page 5); Engelman (1998); Vogel & Engelman (1999); and United Nations Population Fund (2001, pages 50-51).

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Networks of Threats and Vulnerability: Lessons From Environmental Security Research

RICHARD MATTHEW and BRYAN MCDONALD

Over the last 10 years, environmental security research has brought new ideas to the field of security studies; broadened our understanding of global change, conflict, and vulnerability; and explored the roles of conservation and sustainable development in promoting peace, stability, and human security. Today, another powerful new idea has emerged: national and international security agendas are focusing as much attention on "network-based threats"—terrorism, computer viruses, and epidemic diseases, for example—as on the perennial problem of war. If researchers reorient security studies to systematically investigate these transnational dangers, policymakers might be able to devise effective evidence-based solutions to the growing number of threats that do not follow the traditional state-centered security model. And this emerging field offers new lessons for environmental security research, revealing connections between processes of global change and deepening understanding of conflict and cooperation.

What is a network-based threat? Take, for example, climate change. People make decisions about their energy use based on their immediate social, economic, and ecological surroundings. These decisions constitute an informal web—a dispersed, transnational network[1]— of individual behaviors that ultimately combine to produce climate change, which has become a human and national security problem with uneven impacts across the world. This is demonstrated by the increasing frequency and severity of natural disasters, such as the floods that swamped 60 percent of Bangladesh in summer 2004 ("Battle to get aid," 2004; Logan, 2004).

Malevolent threat networks, such as global terrorism, share some structural characteristics with accidental threat networks like climate change: they are dispersed—therefore difficult to neutralize through negotiations or force—and they can accommodate and be amplified by diverse motivations. Although threat networks like climate change and global terrorism could be extremely dangerous and costly, it is hard to identify an effective mitigation policy, since no single incentive structure is likely to modify the behavior of all of a network's nodes; the net-

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work's effects vary across time and space; and the capacity to promote change is distributed unequally among states and non-state actors.

Environmental security (ES) scholarship provides important theoretical and methodological underpinnings for the embryonic field examining these threat networks. ES literature introduced an interdisciplinary perspective into traditional security practice, promoted the incorporation of security issues into mainstream endeavors like business and engineering, and explored the interactive dynamics of the diverse human and natural networks that constitute the modern world. While the ES field does not offer a suite of all-purpose solutions to transnational security challenges, it does provide useful analytical tools based on extensive research and debate. In addition, bringing together these fields can also help correct flaws in ES research, such as lack of engagement with the broader security community.

The New Security Landscape: Networks of Threat and Vulnerability

Most of the planet's terrain is now divided among 191 sovereign states,[2] many of which have achieved the security from internal conflict and external military aggression envisioned in Thomas Hobbes' seminal 1651 work, *Leviathan*.[3] For 300 years following 1648's Treaty of Westphalia, sovereign states aspired to self-sufficiency and viewed other states largely in terms of domination and balance. After World War II, however, these ideals were abandoned in favor of the United Nations system of formally sovereign states constrained by international law and mutually beneficial trade relations.[4] Michael Doyle (1983) and other scholars have argued persuasively that a "liberal zone of peace" has emerged: liberal states are democratic, respect international law, and engage in trade. They fight non-democratic states but not each other, thus creating zones of peace.

However, open democracy and trade have been a mixed blessing. Over the past several decades, the international and transnational networks linking states have grown more numerous and more sophisticated, propelled by rapid technological innovation and diffusion (Zacher, 1992). These networks have generated wealth, knowledge, power, and cooperation in ways that have improved the lives and enhanced the security of millions of people. However, they have also introduced threats and vulnerabilities, ranging from old-fashioned religious extremism to modern computer viruses, by empowering non-state actors through unprecedented access to information, communication systems, and transportation, resulting in a technologically accelerated political condition that we describe as "hyper-medievalism."

Rather than aggregating political and economic power within a defined territory, a hyper-medieval world is highly decentralized. Multiple stakeholders—from warlords to business cartels—compete effectively with states, which may fail due to corruption or ineffective law enforcement. Technology has reduced barriers to power accumulation, accelerating the start-up phase for new power-holders and injecting high levels of turbulence into the global system (Rosenau, 1990). Speed, knowledge, mobility, and reach are great assets for legitimate businesses and scientific research projects—but also for drug traffickers, timber mafias, human smugglers, terrorists, and identity thieves.

Transnational networks are not easily dismantled or neutralized. Investigative reports by PBS and ABC concluded that the war on drugs has placed 1.5 million Americans in prison and cost hundreds of billions of tax dollars, and yet it has not made a dent in the production, transportation, sale, or use of illegal drugs, which is valued at $300 billion to $400 billion a year (Schaffer, n.d.; Frontline, 2000; Stossel, 2002). As soon as one trafficker is arrested, another steps in; when pressure is applied to one country, production moves to another; and vast sums of money breed corruption in law enforcement at home and abroad. After 30 years of war, the enemy—the transnational network of drug traffickers—is

larger, richer, and more powerful than ever before.

Even perfectly respectable networks pose security problems when they transmit the negative effects of their legitimate activities across national borders. For example, currency traders in one country can trigger panic selling in others, as demonstrated by Southeast Asia's "financial flu" in the 1990s. Today, epidemiologists are concerned about diseases that could jump from animals to people and move rapidly across the planet to reach large populations in a matter of hours.[5] The Internet, a valuable tool for individuals and groups worldwide, is also susceptible to viruses and can be used by criminals and terrorists to commit fraud, launder funds, and share information.

Lessons From Environmental Security Research

The process of understanding network-based security issues, and effectively addressing them, is still in its infancy, but pioneering ES research has made significant contributions to this new field. The powerful criminal and terrorist networks that challenge security share characteristics with the benign transnational networks, such as waterways and forests, that ES researchers study.

Environmental security research brings together experts whose work initially developed along independent trajectories. Since the 1990s, social scientists, conservationists, and defense personnel have collaborated to understand the security implications of resource scarcity and abundance, environmental impacts of military activities, conservation practices' effect on conflict, and new asymmetrical conflicts at the human security level involving military or paramilitary assets.[6] Although unfinished, this work has generated practices and insights—like promoting interdisciplinary research and moving beyond the traditional security community—that can be applied to help understand and address other network-based security problems.

Promoting interdisciplinary research

Contemporary security requires expertise beyond the traditional grasp of senior military personnel and political scientists. Networks often bring together entities that share a goal or capability but otherwise differ in substantive ways. Contemporary terrorist networks, for example, are much more inclusive than the 20th century's close-knit groups. Al Qaeda can accommodate anyone with a grievance against the United States or its allies, or who sees participation as a way to accumulate resources or advance a more local agenda. Osama bin Laden may not be able to control all al Qaeda activities, but consequently, al Qaeda can survive massive disruptions of its leadership, funding, and training grounds. Understanding the threats posed by this type of dispersed, transnational terrorist network requires a range of diverse expertise:

- Understanding motivations requires psychologists, theologians, sociologists, political scientists, and criminologists;
- Understanding how capacity (e.g., recruits, funds, weapons, information, and media attention) is amassed requires businesspeople, scientists, and information technology specialists, as well as social scientists, law enforcement personnel, and military experts;
- Understanding the realm of opportunities available for terrorists requires people familiar with the inner workings of the internet, international business, and epidemiology; and
- Attacking the root causes of terrorism and developing effective countermeasures requires interdisciplinary research on a scale unfamiliar to the security community.

Moving beyond the traditional security community

Contemporary security studies should be included in business, medical, engineering, criminology, and computer science education

programs, so that specialists in these areas can examine the security implications of their practices. For example, every doctor should understand how the country is likely to respond to a lethal epidemic or chemical release, and engineers should learn how to design buildings that are less vulnerable to attack. Network-based threat analysis could provide valuable input for financial risk assessments and investment decisions,[7] and it could delineate the interdependence of internal and external national security problems for law enforcement and intelligence personnel.

Studying the dynamics of global networks: Examples

The interactive dynamics of networks—such as the environment, the market, and global terrorism—need to be analyzed via both quantitative and comparative case study methods, as in the following examples drawn from ES research in Nepal and Pakistan.[8]

In 1976 the Government of Nepal established the Koshi Tappu Wildlife Reserve in the eastern part of the country. This protected wetland, which became a Ramsar Wetland of International Importance[9] in 1987, lies along a 24-kilometer section of the Koshi River in an area known as the Terai. A portion of the area downstream from the reserve was leased to India so it could develop a dam. Settlers moved to this region to relieve pressure on the Kathmandu Valley and create a Nepalese presence along the border with India. The settlers, who relied largely on fishing and gathering, were displaced by the reserve and the lease. Now, they must eke out an existence in a remote, resource-poor region, vulnerable to any sort of shortage.

For the past decade, Nepal has suffered a violent conflict between Maoist insurgents and the government. The Maoists are very active in the eastern part of the country, where they have promised to return the reserve's land to the local residents. This rhetoric has mobilized sympathy and support for the rebels. Some analysts consider the Maoists a terrorist group that may be expanding its transnational links to left-wing groups in India, the Tamil Tigers in Sri Lanka, and other extremist groups in South Asia (South Asia Terrorism Portal, n.d.). Understanding the Maoists requires understanding the relationships among the world economy, which influences the Nepalese government's decisions, such as the lease to India; environmental stressors, like the migration from Kathmandu Valley and resource scarcity in the Terai; and regional strategic considerations, such as Nepal's vulnerability vis-à-vis India and, to some extent, China. Only this approach, common to ES literature, can adequately reveal the relationships that create, sustain, and strengthen a transnational threat network, and identify the pressure points for reducing the threat. In this case, improving settlers' livelihoods and legal protections, while preserving the conservation benefits through a sustainable use plan, might be a low-cost way to undermine support for the Maoists and a far more productive approach than the protected reserve.

The situation in the Dir-Kohistan region of Pakistan's North West Frontier Province provides another example of how ES research can be expanded to other transnational threat domains or used as a model for such analysis. Over 36 percent of Dir-Kohistan's 4,645 square miles is coniferous or oak scrub forest. It is one of the country's least developed areas, with an agrarian-subsistence economy, extremely low literacy rates (less than one percent for women), and little infrastructure. Traditionally, forest resources, which provide fuel wood, building materials, and other commodities, were allocated by the *nawabs,* or leaders, through a system of customary rights and principles that clearly favored the Kohistani over the region's other two ethnic groups, the Pathan and Gujar. Disputes were settled through ad hoc community councils known as the *jirga.*

In 1927 the British passed the Colonial Forest Act, which largely excluded local communities from the forests while granting some concessions to the Kohistani; Pakistan retained this legislation after independence in 1947. As

National and international security agendas are focusing as much attention on "network-based threats"—terrorism, computer viruses, and epidemic diseases, for example—as on the perennial problem of war.

Pakistan sought to gain control over its northern regions, the forests were largely ignored, but as their commercial value increased in the 1960s, they were leased to private contractors in return for generous royalty payments. When local people protested these terms, the government agreed to raise the community's share from 12 percent to 60 percent of the royalties. Unfortunately, due to widespread official corruption and the timber mafia's strong-arm tactics, local communities received very little as the forests were rapidly cleared in the 1970s.

In recent years, Islamic law has gained influence in Dir-Kohistan, especially among the Pathan and Gujar communities, which have adopted it in areas where they constitute a majority. Residents of Dir-Kohistan believe Islamic law is less biased than customary or statutory law and less prone to corruption. It is also more generous towards women, and thus appeals to the half of the population denied legal standing for centuries. From the perspective of many outsiders, the rise of Sharia law indicates a capitulation to Islamic extremism and creates a safe haven for Taliban and al Qaeda supporters. There is no doubt that this conflict-prone region includes some supporters of these transnational threat groups, but it is equally true that a combination of environmental scarcity, failed legal systems, and government corruption created conditions under which Islamic law became the only support system for many local residents. To successfully address threat and security issues in Dir-Kohistan, as much—if not more—attention should be given to improving sustainable livelihoods, education, and law enforcement, as to rounding up drug traffickers, offering bounties, and imposing sanctions. The security policymakers' knowledge of this region is not often based on the fine-grained field research undertaken by ES scholars. Following this trajectory might lead to more effective and less costly policies that undermine transnational terrorism by providing viable opportunities for sustainable employment and justice.

Lessons for Environmental Security

Since the mid-17th century, and especially since World War II, the field of security studies has been constructed to investigate and help resolve the problem of interstate war. Today, transnational threat networks present as great a challenge to national and human security as war, as ES researchers argued in the 1960s, 1970s, and 1980s.[10] After a dramatic growth spurt in the 1990s, ES has produced a body of theoretical and methodological insights into the study of other network threats, as discussed above.[11]

The study of network-based threats also offers lessons *for* environmental security. For example, a full analysis of a threat system like global terrorism will probably reveal connections between the network and global environmental processes, which may lead to ideas for viable interventions. In addition, the ES literature could close some of its internal gaps by engaging the broader security community on concepts such as threat, vulnerability, conflict, and cooperation.[12] ES researchers often resist responding to the extensive literature on conflict and cooperation, and reduce this complex world to a meta-variable (e.g., undifferentiated "social factors") that affects the relationship between the environment and conflict. Thus, network-based threat analysis could provide ES researchers with a way to deepen their understanding of security theories.

Over the next 10 years, as the United States and many other countries struggle to come to terms with new threats and vulnerabilities, ES research could support the development of an emerging field that may transform our understanding of human and national security, while reaping its own beneficial insights into new networks of conflict and cooperation.

Notes

1. There is no consensus on the definition of "network" or how to distinguish it (if necessary) from "system." Here, we use the term network in its most elemental sense: "an interconnected system of things or people" (retrieved on August 17, 2004, from Word

Net: http://www.cogsci.princeton.edu/cgi-bin/webwn?stage=1&word=network).

2. The United Nations (2004) has 191 members. The United States recognizes 192 states: UN members plus Taiwan (U.S. Department of State, 2004).

3. Partially inspired by England's violent civil wars, *Leviathan* envisioned the sovereign, territorially delimited state as the optimal arrangement for maximizing human security. Europe could escape the strangling grip of its royal families and the Catholic Church, Hobbes argued, only by centralizing political power and demarcating the precise territorial limits of its jurisdiction.

4. As of April 2004, 147 states belong to the World Trade Organization.

5. This possibility was demonstrated by the rapid emergence and spread of Severe Acute Respiratory Syndrome (SARS) in 2003 (Centers for Disease Control and Prevention, 2004).

6. On resource scarcity and security, see Thomas Homer-Dixon (1999); on resource abundance and security, see Gleditsch and de Soysa (1999); on the environmental impacts of the military, see Hawley (1992); on the security implications of conservation practices, see Matthew, Halle, and Switzer (2002); and on the human security implications of asymmetrical war, see Benini and Moulton (2004).

7. For example, businesses are wary of investing heavily in climate change mitigation. Training designed to accurately measure the costs of such security risks might overcome this reluctance; see "Most U.S. Industry Giants Ignoring Global Warming" (2003).

8. These examples are based on a study of livelihoods, resources rights, and conflict in Nepal, Pakistan, Bangladesh, and Sri Lanka, led by IUCN South Asia. Co-author Richard Matthew is a senior consultant for this study. Information about the project is available on the IUCN website (http://www.iucn.org/places/asia/livelihood/index.html) and findings will be published in an edited volume in 2005.

9. The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty that promotes international awareness and cooperation for the conservation and wise use of wetlands and their resources; see http://www.ramsar.org/ for more information.

10. See, for example, Ophuls (1976), Brown (1977), Ullman (1983), World Commission on Environment and Development (1987), and Mathews (1989).

11. See, for example, Connor (2004) and Physicians for Social Responsibility (2004).

12. For more discussion of the gaps in ES research, see Matthew, Brklacich, and McDonald (2004).

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SPECIAL REPORT

Population, Development, and Environment in Ethiopia

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SAHLU HAILE

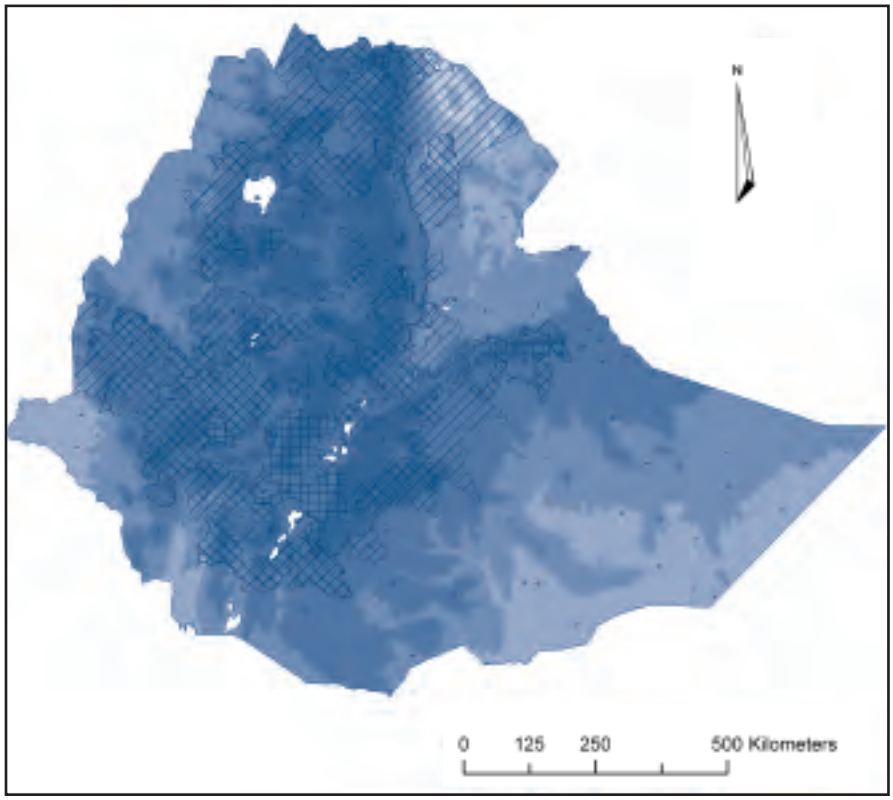
Ethiopia has been synonymous with disastrous famine since the 1980s. In the years since, drought and famine have continued to plague the country, and scholars and practitioners have sought to analyze the causes and mitigate the consequences. Population growth is one of the most critical drivers shaping the country's future, as its social infrastructure and agricultural land are unable to support its growing numbers, and thus many Ethiopians remain trapped in a vicious cycle of poverty, disease, and hunger. The key to achieving sustainable growth lies in reducing the rate of population growth, managing the environment, and building the platform for development. Educating and empowering young girls, changing traditional practices that encourage early marriage and early childbearing, and increasing access to family planning are all steps that could contribute to reducing the country's rapid population growth. While Ethiopia's government has developed a population policy to encourage such efforts, it has so far struggled to implement it due to inaction, disinterest, and ambivalence by senior officials.

Population, Development, and Health[1]

The impact of population growth on development is not inherently negative or positive. When accompanied by rapid economic and technological advances, population growth can actually contribute to national development (see Birdsall, Kelley, & Sinding, 2001). According to the United Nations Conference on Trade and Development (2002), "In a technologically dynamic developing economy, where rapid processes of capital accumulation and structural change lead to rapid rates of employment generation…population growth need not necessarily have detrimental environmental and poverty implications" (page 95). Unfortunately, Ethiopia—the third most populated country in Africa, with 72 million people—gains almost 2 million people a year in a highly unfavorable economic and environmental context (UN Population Division [UNPD], 2003). At UNPD's current estimate of 2.46 percent, the country will reach 100 million in the next 15 years.[2] Even if drastic measures slow the rate of growth, the population will continue to increase as the country's 47 million youths under the age of 24 raise their own families.

Ethiopia's economic and social indicators are declining as the population grows. Its industrial

Elevation and Population Density in Ethiopia



Elevation (meters a.s.l.)

- Below sea level
- 0-500
- 500-1000
- 1000-2000
- Greater than 2000

Population Density (persons per sq km)

- Less than 25
- 25-50
- 50-100
- 100-200
- Greater than 200

Sources:
Population: Center for International Earth Science Information Network (CIESIN), Columbia University; International Food Policy Research Institute (IPFRI); the World Bank; and Centro Internacional de Agricultura Tropical (CIAT); 2004. Global Rural-Urban Mapping Project (GRUMP): Urban/Rural Population grids. Palisades, NY: CIESIN, Columbia University. Available at http://sedac.ciesin.columbia.edu/gpw/
Elevation: ISciences (2003), SRTM30 Enhanced Global Map - Elevation/Slope/Aspect (release 1.0), Ann Arbor: ISciences, LLC

and agricultural output is low, export income is minimal, and the country is heavily dependent on foreign assistance. Per capita income is only $100 and over 44 percent of the population lives below the poverty line. (Ethiopian Economic Association, 2002). The majority of Ethiopia's population is economically inactive; over half are too young or too old to work, and only half of the working-age population is employed full time.[3] Therefore, a small working population must provide for a large number of unemployed young people, creating a disproportionately high dependency level that inhibits investment in the future.

The agricultural sector—the mainstay of the national economy—is less productive per capita today than it was 20 years ago (Ethiopian Economic Association, 2002). Arable land is overcrowded, overcultivated, and under-maintained. Eighty percent of the population lives in the highlands, which cover only 45 percent of the country and suffer from widespread erosion, deforestation, and loss of nutrients, further reducing the per capita share of arable land (Teketay, Fetene, & Abate, 2003, page 9). Suffering from prolonged cultivation, lacking modern production techniques (e.g., fertilizers), and overly dependent on rainfall (less than two percent is irrigated), over four percent of the country's arable land has completely lost its ability to produce food (Teketay, Fetene, & Abate, 2003). In addition, the government's questionable land tenure system, under which the government owns and frequently redistributes farmland, creates a climate of uncertainty that discourages personal investment and thus reduces productivity.[4]

Ethiopia depends on foreign aid, which has grown from less than 1 percent of GDP in 1970 to almost 15 percent in 2000, for its basic needs (Ethiopian Economic Association, 2002). In 2001, 39 percent of its central government expenditures were funded by foreign aid (World Bank, 2003). The 2003 drought—the worst in the country's history—forced 13 million people, or almost a fifth of the population, to rely on food aid (International Monetary Fund, 2004). While these disasters occurred every 10 to 15 years in the past, they are now almost permanent features; as a consequence, Ethiopia has become synonymous with famine and natural catastrophe.

Population growth and economic malaise combine to create a dangerous situation for the health of Ethiopia's residents. Life expectancy is 42 years at birth, infant mortality is 114 per

1000 live births, and the mortality rate for children under age five is 171 per 1000 live births (World Bank, 2004). Malnutrition is a chronic problem: more than half of children under five years are stunted, while 47 percent are underweight (UNICEF, 2004). According to the World Food Program (2004), the average daily calorie intake of the population (2,037 per day) lags behind the minimum recommended intake of 2,300 calories.

Ethiopia's health infrastructure is not keeping pace with population growth. A recent report from the World Bank and Ethiopia's Ministry of Health (2004) affirms that at the current pace, achieving the child survival objective of the Millennium Development Goals will be challenging.

- Only about 40 percent of the population lives within five kilometers (one hour's walk) of a health facility;
- The ratio of health professionals is extremely low: the three largest regions have only one doctor per 55,000 people, one nurse per 10,000 people, and one midwife per 100,000 people; and
- Vector-borne diseases (usually relatively easy to control) affect more than 10 percent of the population.

And the HIV/AIDS pandemic is now a major public health problem: although Ethiopia represents 1 percent of the world's population, the estimated 1.5 million living with the virus equals 4 percent of the world's HIV/AIDS sufferers in 2003 (UNAIDS, 2004). HIV/AIDS is damaging the country's socio-economic fiber: more than 90 percent of those infected are between the ages of 15 and 49—the most productive segment of society—and 720,000 children have been orphaned (UNAIDS, 2004).[5]

Population, Development, and the Environment

Ethiopia's unsustainable population growth contributes not only to its dire economic and social situation, but also to the country's environmental degradation, especially in the densely populated highlands. These sloping lands, occupied since time immemorial, are severely deforested, overcultivated, eroded, and nutrient-poor. Dr. Assefa Hailemariam (2003), a demographer and development specialist, cites a 1978 study by K. J. Virgo and R. N. Munro to illustrate the problem's roots: "Reconnaissance soil surveys covering 6000 km^2 in the Central Plateau region, at elevations of 2000-2800 meters above sea level, have found that all the land that is physically cultivable is now cultivated. The only lands not cultivated are in depressions and on steep rocky slopes."

As the population grows and people overcultivate scarce land, its nutrient value is reduced and erosion takes it toll. An expert panel (Teketay, Fetene, & Abate, 2003) recently reported that erosion has seriously degraded over 50 percent of Ethiopia's arable land and projected a grim future:

> While the soils in the Ethiopian highlands have a high inherent fertility, the continuous removal of nutrients without replacement as well as the steep and dissected terrain with extensive areas of slopes of over 15 percent, coupled with the high intensity of rainfall, have led to accelerated soil erosion reaching up to 400 tons/hectares/annum.....About 20,000-30,000 hectares of cropland in the highlands are being abandoned annually since cropping can no longer be supported by the soil. It is projected that land degradation at the present rates could destroy the farmlands of some 10 million highland farmers by 2010. (page 12).

Population, deforestation, and erosion are part of a vicious cycle: Hailemariam (2003) notes that less than three percent of the country is currently forested and points out, "As population pressure increases, particularly in the highlands, farmers intensively exercise deforestation. This will leave farmlands and grazing lands exposed to erosion, followed by massive land degradation" (page 9). At the current rate of deforestation of over 150,000-200,000 hectares per year, it will

be completely deforested in less than 20 years unless drastic measures are taken to reverse the trend (Teketay, Fetene, & Abate, 2003, page 11). Why such a high rate? Inhabitants are totally dependent on forest wood for construction and fuel, and overcultivate and overgraze the land. Deforestation is most pronounced in the highlands due to the highly concentrated population, but even in the more favorable lowlands, clearing forests and pastures for new migrants, coupled with archaic farming techniques, is rapidly destroying the ecosystem.

Internal Migration

To cope with the problems of land degradation, the government has initiated a program to resettle people from the agriculturally poor highlands to more fertile lowlands.[6] While it is too early to judge the current program, it is hoped that the government will not repeat past mistakes. Previous resettlement programs were not voluntary. Neither were they based on serious economic, social, and environmental studies. According to social scientist Dessalegn Rahmato (2003), in response to the famines of the mid-1980s, the government resettled 600,000 people from the northern highlands to the lowlands of western Ethiopia, with terrible results:

> In this same period, some 33,000 settlers lost their lives due to disease, hunger, and exhaustion and thousands of families were broken up….The program involved considerable environmental damage. Large areas were cleared of their vegetation to build homesteads, to acquire farmland and to construct access roads. Resettlement in particular failed to recognize the rights of local people or the carrying capacity of the areas of settlement. It created conflict between the host population and settlers. It also failed to adapt farming practices to the agro-ecological conditions of the lowlands, and as a consequence, the environmental damage involved was quite considerable. Moreover, one of the objectives of resettlement was to reduce the population pressure of the highlands and thereby to control natural resource degradation. In the end, resettlement had no or limited impact on population pressure or land degradation. (pages 13-14).

The current resettlement effort may solve the immediate problem of drought and famine. In the long run, however, it will only distribute the problem geographically. While the government is trying to resettle about two million highlanders in the next three years, the region's population will increase by approximately five million people over the same period due to natural population growth. Also, as the population of the more fertile lowlands of the south and southwest grows, it will not be long before these areas also suffer a shortage of arable land and increased social tensions.

Urbanization

Urbanization is not yet a major problem in Ethiopia. However, the rate of population growth in urban areas is much higher than in rural areas: while the national population growth rate is 2.46 percent, the urban centers grow at a rate of 4.1 percent as drought and famine in the rural areas force people to seek alternative livelihoods in the cities (UNPD, 2003). As often is the case, urban expansion occurs at the expense of productive agricultural land, which increases the pressure on available agricultural land. The cities of Debre Zeit and Nazret (45 and 100 kilometers southeast of Addis Ababa) illustrate the desolation created by urban expansion: on each side of the main highway, rows of ugly and disorganized buildings are rising up to replace hectare after hectare of fertile agricultural land. If the current pace of industrialization continues, the environmental damage and impact on agricultural production will be severe.

The Way Forward

Ethiopia's developmental and environmental challenges are multifaceted and require multi-

sectoral approaches, such as investing in health, education, gender issues, and employment. As demonstrated above, the root of Ethiopia's challenges is its runaway population growth. Addressing the population issue will not solve all the problems, but without initiatives to control it, the country will not develop in a sustainable way. The current government has initiated some bold measures that, if successful, would change the lives of the poor, such as an agricultural policy, a poverty reduction strategy, and the millennium development project. However, none of these policies focus on population, despite its causal role, and the government has failed to commit to and implement its 1993 population policy.[7]

There are many ways to reduce rapid population growth, including educating young women, reducing harmful traditional practices like early marriage and early childbearing, and expanding family planning services. Girls' education is probably the most effective tool for reducing the rate of population growth and altering the country's developmental paradigm. Educated women are economically active, marry late, and make independent reproductive health decisions. For example, contraception is used by less than 5 percent of illiterate women in Ethiopia, while 16 percent of women with some primary education and 45 percent of women with secondary education use family planning methods (Central Statistical Authority [CSA] and ORC Macro, 2001).

However, it is unlikely that Ethiopia will achieve a critical mass of educated women before the population reaches an alarming level. Lacking qualified teachers, adequate educational materials, and infrastructure, education in most of the country is very poor. According to the Ethiopian Economic Association (2002), only two-thirds of children attend primary school; the rate for girls is a little more than 50 percent, versus 72 percent for boys. High school attendance is limited to less than 10 percent (12 percent boys, 8.5 percent girls) while only 2 percent go on to higher education. Less than 20 percent of women—compared to 40 percent of men—are literate (Network of Ethiopian Women's Association [NEWA] & Ethiopian Women Lawyers Association [EWLA], 2003). By 2020, the number of school-age children (7 to 12) will grow to 22 million, more than double the number in 1990, requiring a threefold investment in the education sector just to maintain the current dismal level of quality (Ethiopian Economic Association, 2002).

Ethiopia's leaders must make a strong commitment to family planning and reproductive health at all levels. Without such commitments, local programs may make progress, but will not make a dent in the overall population situation.

Traditional practices encourage early marriage and immediate childbearing. The average age of girls at marriage is 17 years; over 40 percent of girls are mothers by the time they reach age 19 (NEWA & EWLA, 2003). Each Ethiopian woman will bear an average of 5.9 children (2 of which are unwanted and/or unplanned)—and this number is significantly higher in rural areas (CSA & ORC Macro, 2001). Delaying girls' marriage by at least three years will significantly impact the rate of population growth (Zlidar et al., 2003). Many NGOs are conducting education campaigns against harmful traditional practices.[8] Combined with rapid urban development, active community involvement, and mass media attention, these campaigns have produced important gains in girls' rights. For example, recent court cases have thwarted parental attempts to force early marriage or genital mutilation, and the government has promulgated new laws that make some traditional practices criminal offenses punishable by imprisonment.

Delaying marriage and childbearing also improves maternal and child health; early childbearing, short birth intervals, and having more than four children are major causes of maternal mortality and morbidity. High-risk births can be avoided by spacing births two or three years apart, delaying first births until at least the age of 18, and reducing the total number of births per woman (Upadhyay & Robey, 1999). Ethiopia's maternal mortality rates are among the highest in the world: according to the World Health Organization (2000), 850 mothers die per 100,000 live births, and one out of every 14 Ethiopian women is likely to die from pregnancy-related complications; in Europe and the United States, it is only about one out of 5,000. Save the Children's (2004) recent assessment of maternal health around the world ranks Ethiopia among the worst countries in the world for mothers. However, access to basic reproductive health services—especially family planning—could decrease maternal mortality significantly.

The easiest and most cost-effective response to population pressure is making family planning services as widely available as possible. Concerted efforts to provide contraceptives to those women who want and demand them will contribute significantly towards stabilizing the population growth. In 2000, less than eight percent of reproductive-age women were using modern family planning methods (CSA & ORC Macro, 2001). (Recent reports from the Ministry of Health put this figure a bit higher, but this needs to be confirmed.) Had services been available, more than 45 percent of women would use them to space or limit their child bearing (CSA & ORC Macro, 2001).

Some recent NGO programs show that significant progress can be achieved when family planning services are offered in a culturally and socially appropriate manner. According to internal Packard grantee reports, a community-based reproductive health program in Amhara, the country's second-largest region, combined family planning with other development initiatives to achieve a contraceptive prevalence rate of 39 percent (up from a baseline of 5 percent) in less than five years.[9] In Western Oromiya, the same approach enabled the Oromo Development Association to achieve 23 percent prevalence. Similar results were obtained in South Wollo, Jimma, and parts of the southern region. However, these successes are few and far between; in most of the country, services are unavailable or inaccessible to the majority of the population.

Government Policy

Ethiopia's National Population Policy, developed in 1993, identifies major obstacles to the country's development effort and proposes measures to address these obstacles. The transitional government, with support from the United Nations Population Fund, developed it prior to—and probably in preparation for—the 1994 International Conference on Population and Development in Cairo. At the time, few countries in Africa had population policies.

The National Population Policy seeks the "harmonization of the rate of population growth and the capacity of the country for the development and rational utilization of natural resources to the end that the level of welfare of the population is maximized over time" (section 4). Specifically, the policy seeks to increase contraceptive usage from 4 percent in 1993 to 44 percent and to reduce fertility from 7.7 children per woman to 4 by 2015 (section 4). Other objectives include reducing maternal and infant morbidity and mortality, increasing female participation in all levels of the educational system, ensuring spatially balanced distribution of the population, and improving agricultural productivity.

Had the policy been implemented as intended, Ethiopia would have made significant progress in reducing the rate of its population growth. But implementation has been a major problem. Senior government officials often take actions that are contrary to the policy, or take no action at all. A recent evaluation of the health development program identifies lack of commitment by government officials as the major impediment to the population policy's proper

implementation (Federal Ministry of Health, 2003).[10] Ethiopia's leaders often compare its population problem to China's or India's, and conclude that population growth will not negatively impact the country's development, as China and India are enjoying strong economic growth. However, Ethiopia is not like either of these countries: its level of education is far less, and it is not nearly as technologically advanced. Unfortunately, nothing indicates that Ethiopia's economy will reach that level before the population becomes unmanageable.

Ethiopia's leaders must make a strong commitment to family planning and reproductive health at all levels. Without such commitments, local programs may make progress, but will not make a dent in the overall population situation. No population program has succeeded without strong and proactive support from national governments.

International and local level support can complement but not replace government commitment, which is the driving force for population or other development programs.

Ethiopia's leaders should support expanded family planning because, in addition to addressing the population growth problem, it contributes to national development. The Millennium Development Goals adopted by the government identify several targets to be achieved by the year 2015, including reducing child mortality and combating HIV/AIDS (Ministry of Finance and Economic Development [Ethiopia] & UN Country Team, 2004). However, the goals do not mention family planning or reproductive health services, even though family planning services will contribute greatly to the achievement of every one of the development goals.

Family planning helps fight AIDS, for example; both programs not only distribute condoms to their clients, but also share the same health professionals, health facilities, and educational materials. Large families contribute to child malnutrition, while children that are born at reasonable intervals are usually better fed and in better health. In addition, as noted earlier, Ethiopia depends on outside assistance to feed its people, and therefore can not claim independence from its donors. Since this functional loss of sovereignty arises from the asymmetry between population growth and production capacity, population becomes a question of national security.

Finally, the most important reason for expanding family planning: deciding the number and spacing of children is the basic right of every man and woman. It is ironic that those who oppose family planning programs are society's wealthy, who earn wages far higher than the national average, have access to adequate health and education facilities, and choose to have two or three children. Shouldn't the rest of the population have the same choice?

Notes

1. This article is an expanded and updated version of "Population and Development in Ethiopia" (Haile, 2003), which is available online at http://www.waltainfo.com/Profile/SpecialReports/2003/June/report1.htm.

2. UNPD (2003) estimates the current population growth rate at 2.46 percent, while the 2000 Demographic and Health Survey (CSA & ORC Macro, 2001) estimates a 2.7 percent growth rate. While Ethiopia's population growth rate increased from 1.5 percent in the 1940s to 3.1 percent in the 1980s, the current growth rate has declined due to a dramatic decrease in fertility in urban centers (3.1 children per family), even as the rural population maintains a high fertility rate of 6.5 children per family (CSA & ORC Macro, 2001).

3. According to the Ministry of Youth, Sports, and Culture, 38.2 percent of urban residents aged 15-29 and over a third of high school graduates are unemployed; the rate is much higher for young women (Toga, 2003). For every unemployed man, two women are looking for a job (NEWA & EWLA, 2003).

4. For more information on Ethiopia's land tenure system and agricultural development, see the research report by Ethiopian Economic Association & Ethiopian Economic Policy Research Institute (2002).

5. A recent study by the Ethiopian Economic Association (2002) found that in two textile factories outside Addis Ababa, 17 percent of the deaths from 1995 to 2000 were due to AIDS. During the period 1996-2000, 37.8 percent of deaths at two government departments were from AIDS, and in three community-based organizations (edirs), 26.5 percent of the total number of deaths were reportedly from AIDS.

6. In general, the lowlands are less populated because they are drier, hotter, and infected with malar-

ia and tse tse fly.

7. For the text of Ethiopia's National Population Policy of April 1993, see http://cyber.law.harvard.edu/population/policies/ETHIOPIA.htm.

8. See, for example, Pathfinder International's efforts to raise awareness about harmful traditional practices in Ethiopia's House of Representatives at http://www.pathfind.org/site/PageServer?pagename=Priorities_Advocacy_Field_Advocacy_Ethiopia_HTP.

9. For more information on the Packard-funded programs in Ethiopia, please contact the author at SHaile@packard.org.

10. The lack of commitment by government officials might be tied to women's low level of participation in the public sector: only one of its 18 cabinet ministers is female, and only eight percent of the national parliamentarians are women (and even less at the lower level). Women constitute about 25 percent of the public service workforce, and 75 percent of them are support staff (NEWA & EWLA, 2003).

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POLICY BRIEFS

The United Nations and Environmental Security: Recommendations for the Secretary-General's High-Level Panel on Threats, Challenges, and Change

Calling this post-Iraq moment "no less decisive than 1945 itself," in 2003 UN Secretary-General Kofi Annan convened a High-Level Panel on Threats, Challenges, and Change to improve how the United Nations prevents and removes threats to peace. Eminent world citizens like Brent Scowcroft, Gro Harlem Brundtland, Sadako Ogata, and Nafis Sadik were asked to recommend clear and practical measures for ensuring effective collective responses to the world's security problems, ranging from terrorism and weapons of mass destruction to "soft threats" like extreme poverty and disease.

Environmental issues are firmly on the UN agenda, but they tend to remain discrete topics that lack sufficient coordination across agencies. The secretary-general has repeatedly maintained that environmental issues must be integrated into the UN's larger development and security agenda, as outlined in his 2003 interim report on the prevention of armed conflict. In preparation for its December 2004 report, the High-Level Panel sought recommendations that, if adopted, would inject environmental issues into the security dialogue and transform speech into results.

As part of the UN Foundation's United Nations and Global Security Initiative, the Environmental Change and Security Project (ECSP) invited international experts to provide the panel with fresh intellectual insights into environmental security. Leading thinkers in the fields of water, climate change, and natural resources prepared three short policy briefs (included here with permission of the UN Foundation) that seek to answer three questions posed by the panel:

- What is the link between environment and security?
- What can be done about it?
- What contributions can be made by collective action mechanisms such as the United Nations?

A select group of scholars, policymakers, and practitioners discussed these papers at the Woodrow Wilson Center on June 2, 2004. A report summarizing the group's recommendations to the High-Level Panel can be downloaded from ECSP (http://www.wilsoncenter.org/ecsp). For more information on the UN Foundation's United Nations and Global Security Initiative and a complete listing of input papers to the High-Level Panel, please visit http://www.un-globalsecurity.org.

U.N. flag (Credit: Corbis)

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Linkages Between Environment, Population, and Development

MICHAEL RENNER and HILARY FRENCH

What Is the Problem?

Environmental problems—the overuse of natural resources and the degradation of ecosystems—are increasingly understood to play an important role in increasing human vulnerability, undermining livelihoods and human well-being, creating instability, and potentially generating or exacerbating violent conflict. The depletion of water resources, overfishing, degradation of arable land, decimation of forests, and alteration of natural cycles and ecosystems are among the principal concerns. Climate change is likely to augment these challenges. Different environmental problems can be traced to various roots, but common underlying causes typically include overconsumption in the world's richer nations and communities, demographic pressures in poorer societies, and distributive inequities in both the global North and South.

Although environmental change threatens all of humanity, people living in the developing world are often the most vulnerable to its effects, as large portions of these populations are directly dependent on activities such as agriculture, forestry, and fishing for their well-being and survival. These activities depend on healthy ecological systems, and there are few buffers to protect the poor from the repercussions of environmental decline.

In at least some cases, environmental change can be a factor in generating or exacerbating violent conflicts. But scholarly research shows that environmental change is never a single cause of conflict. Environmental issues are part of a complex mix of factors and pressures that vary in composition and dynamics from country to country. Persistent poverty, growing income inequality, population growth, job shortages, and disease burdens are key additional concerns. This potent combination is placing severe stress on the social fabric of many communities, leading to political strife in a number of countries, and even to devastating violence in some.

Environmental challenges do not respect human-drawn boundaries, and indeed some—air pollution, climate change-related repercussions, and water scarcity among them—are international or even global in nature. Many analysts have cited rising water demand and conflicting claims to this increasingly scarce resource as a possible cause of future interstate armed conflicts over shared rivers. But it is by no means a foregone conclusion that violence,

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rather than negotiated solutions (e.g., working out water-sharing agreements and joint watershed management), will result. On the whole, environmentally induced conflict is more likely to occur within, rather than between, countries. Growing water scarcity, for instance, has caused internal disputes and, in a few cases, even violent confrontations in several countries, including China, India, the Central Asian states, Mexico, the United States, and Spain.

There are a number of pathways through which environmental degradation can translate into greater vulnerability, instability, and conflict:

Security Conflicts: Scarcity-related disputes may arise over access to renewable natural resources such as water, arable land, forests, and fisheries. This may be the result of tight supplies (depletion or degradation of natural resources), an unsustainable increase in demand owing to population pressures or increased per capita consumption, distributive inequities, or a combination of these factors. Disputes may arise among different communities and regions, and among contending groups that depend directly, though in different ways, on the health and productivity of the natural resource base. Farmers, nomadic pastoralists, ranchers, and resource extractors may find themselves in competition with one another, as happened in a number of recent cases, including conflicts in Rwanda, Sudan, the Chiapas state of Mexico, and elsewhere.

Different social groups and communities experience the effects of environmental degradation unevenly. These divergences can reinforce social and economic inequities or deepen ethnic fault lines, thereby exacerbating existing polarization. It is not a given that the repercussions of environmental degradation will lead to armed conflict. But they do sharpen hardships and burdens, heighten the desperation of those affected, and reinforce the perception that many disputes are of a "zero-sum" nature.

Resource Wealth Conflicts: At the other end of the spectrum from environmental scarcity, resource wealth is also a potential source of conflict. Control over petroleum deposits has been a factor in the sequence of wars that have afflicted Iraq and its neighbors since the late 1970s. Access to oil will likely continue to be a contentious issue as industrialized and industrializing nations grow increasingly dependent on imports. Oil, along with other commodities such as timber, diamonds, and various metals and minerals, has fueled armed conflict in Colombia, Angola, Sierra Leone, Sudan, the Democratic Republic of the Congo, and Burma, by providing governments, rebels, and warlords with the funds necessary to buy arms and maintain fighting forces.

Natural resources play a role in violence in other ways as well. Large-scale mining and logging projects are often characterized by a highly unequal distribution of benefits and burdens. Typically, a small group of domestic elite and foreign investors capture the bulk of the revenues, whereas local communities (often indigenous groups) bear the potential burdens, including expropriation of land, disruption of traditional ways of life, destruction of arable land, forest clear cutting, and disruption of fishing and hunting grounds. Typically, local communities are neither consulted during the planning of such projects nor compensated for their losses, and their grievances often go unheard. Frustration over this situation has led to a number of skirmishes in recent years, such as those in Nigeria and Indonesia.

Food Insecurity: A substantial portion of the world's farmland, estimated at 10 percent to 20 percent worldwide, is degraded to varying degrees. In developing countries, cropland degradation has accelerated in the past 50 years and now affects about one-quarter of total arable land. In many areas of the world, groundwater is pumped at unsustainable rates and groundwater quality is deteriorating. Portions of sub-Saharan Africa, Asia, and the Middle East are already suffering from water scarcity. Climate change is expected to intensify these problems by shifting vegetation zones and increasing the frequency and intensity of droughts.

These pressures translate into reduced agricultural productivity and greater food insecurity, and thus to increased malnutrition in the

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poorest countries. These effects are particularly pronounced where population growth is strong and land distribution is highly unequal. In such situations, small-scale and landless farmers are often compelled to cultivate steep slopes, areas cleared from rainforest, or other unsuitable patches of land. The soil productivity of these areas tends to be exhausted relatively swiftly, forcing people to seek opportunity elsewhere, sometimes in distant cities or even in other countries.

Disease: Illness and death from disease can in some cases be sufficiently severe to undermine economies and threaten social stability. Environmental factors play an important role in the transmission of and human susceptibility to a range of lethal diseases. It is estimated that more than three million people currently die each year from water-borne diseases. Societies across the planet are confronting a resurgence of infectious diseases. Exposure to previously unknown diseases is growing as human encroachment on tropical forests brings people closer to disease vectors. Logging, road building, dam construction, and climate change also enable known diseases to spread to previously unaffected areas. The building of large-scale dams encourages the spread of schistosomiasis. Warmer temperatures and increased precipitation related to climate change facilitate the bacteria that cause diarrheal diseases and are helping to extend the geographic reach of mosquitoes that transmit malaria and dengue fever.

Environmental factors are not at work alone. The spread of pathogens is also facilitated by growing international travel and trade, migrant populations, and the social upheaval inherent in refugee movements. And drug-resistant strains of certain diseases are developing in part because of the overuse of antibiotics in human medicine and animal husbandry. In many developing countries, infectious diseases such as malaria, tuberculosis, and HIV/AIDS, along with respiratory diseases, are overburdening fragile health systems and weakening families and communities.

Disasters, Inhabitability, and "Environmental Refugees": Population movements—induced in part by environmental change—can contribute to instability and conflict. The influx of people into another region or state often imposes a considerable burden on the receiving area through increased pressures on land, water, jobs, communal facilities, and social services. This is especially true if the influx is sudden and massive, and if political leaders or challengers are eager to capitalize on the situation by stirring up xenophobic resentments.

The decay of ecosystems has set the stage for more frequent and more devastating "unnatural" disasters: natural disturbances made worse by human actions. The poor, especially, have inadequate protection against extreme weather events. The past 50 years have seen a dramatic increase in major disasters. More than two billion people worldwide were affected in the 1990s, and the economic toll during that decade was more than that of the previous four decades combined. The experiences of the last few years suggests that the pace is likely to accelerate, especially as climate change translates into more intense storms, flooding, heat waves, and droughts.

The effects of disasters and environmental degradation may in some cases be sufficiently extreme to undermine the habitability of a given area, triggering an exodus of "environmental refugees." Environmental calamities are

already contributing to the displacement of large numbers of people, though reliable numerical estimates do not exist. In addition, huge numbers of people are being uprooted by large-scale infrastructure projects. During the 1990s alone, tens of millions of people worldwide lost their homes to make way for dams, roads, logging operations, and other projects. The World Commission on Dams estimates that 40 million to 80 million people have been displaced by dams.

What Can Be Done?

Countries, communities, private enterprises, and civil society actors can employ many strategies to address the complex linkages between environment, population, development, and security. A multifaceted strategy is needed, including the following elements:

Promote renewable energy and energy efficiency. More aggressively promoting renewable energy and energy efficiency could substantially reduce reliance on oil and other exhaustible energy resources that contribute to global climate change and fan geopolitical tensions and civil wars. Renewable energy technologies are developing rapidly, with global wind power capacity tripling since 1998 and climbing more than tenfold over the last decade. And people living in developing countries could save up to 75 percent of their energy by incorporating more energy efficient cooking and heating technologies.

Combat land degradation and improve water productivity through sustainable agricultural practices and other techniques. A range of sustainable agriculture practices can be employed to combat land degradation, including improving fertilization practices, planting tree crops, and shifting to "no-till" farming practices. With agriculture using about 70 percent of all the water taken from rivers, lakes, and underground aquifers, less water-intensive farming methods could greatly improve water productivity. In general, water scarcity can be reduced by increasing the efficiency of private water use, decreasing leakage during water distribution, and reforming agricultural practices to lower water inputs.

Reduce population growth rates by providing widespread access to family planning, encouraging girls' education, and empowering women. Slowing population growth rates can help reduce local pressures on natural resources, and thereby reduce scarcity-induced tensions. Countries that go through a demographic transition—from high birth and death rates to lower birth and death rates—are marked by higher life expectancies and smaller family sizes. They have a lower likelihood of civil conflict and tend to fare better economically. This transition can be encouraged by expanding girls' educational opportunities, improving maternal and child health, and providing the resources necessary to allow women to choose the timing and frequency of pregnancy.

Safeguard ecosystems on which the poor depend, such as forests, watersheds, arable land, and fisheries. The poor are extremely dependent on local resources for their well-being and survival, as they cannot afford to purchase adequate shelter, food, and fuel. Safeguarding ecosystems ensures that vital ecosystem services such as air and water purification, pollination, climate stabilization, and erosion control are protected, thereby minimizing the potential for conflict over resource scarcity.

Develop certification systems for natural resources that use consumer power to discourage illegal trade and promote sustainable harvesting. Recent years have brought a heightened sensibility on the part of individual consumers to the ties that bind them, through global product chains, to people and communities in distant lands, along with the development of new tools that aid them in acting on this awareness, such as international labeling and certification systems. One example is the impact of the Forest Stewardship Council (FSC), established in 1993 to set standards for sustainable forest production. A decade later, the FSC had certified over 39 million hectares of commercial forest in 58 countries, more than 6 times as much area as in 1998, although this still only amounts to 2 percent of the world's

Working together to protect shared resources could build a spirit of cooperation rather than competition and conflict even among traditional adversaries, possibly advancing regional cooperation.

forests. A Marine Stewardship Council that certifies fish products was established a few years later, and similar efforts are underway for other resources and economic sectors, such as the Kimberley Process certification program that seeks to ensure that diamond revenues do not finance armed conflicts. In the years ahead, greater efforts will be required to integrate conflict prevention and sustainability goals in Natural Resource Certification Initiatives.

What Is the Appropriate Role for the UN and Other International Organizations?

The UN and other international institutions have critical roles to play in spearheading these strategies and initiatives at the international level, including through the following activities:

Facilitate the negotiation and implementation of international environmental treaties and promote regional environmental cooperation. Existing international environmental treaties cover a broad range of issues relevant to environmental security, including climate change, cooperative water management, land degradation and desertification, and biological diversity. But most environmental treaties contain few specific targets and timetables, and provisions for monitoring and enforcement are generally weak to nonexistent. And several important environmental treaties have not yet been ratified by enough countries to enter into legal force, including the 1997 Kyoto Protocol to the UN Convention on Climate Change.[1] The UN Environment Programme (UNEP) and other UN agencies can continue to assist countries with negotiating and implementing relevant international agreements and actions plans, and encourage them to move forward with ratification. The UN can also promote greater regional environmental cooperation to protect shared river basins and other ecosystems. Working together to protect shared resources could build a spirit of cooperation rather than competition and conflict even among traditional adversaries, possibly advancing regional cooperation.

Accelerate efforts to achieve the Millennium Development Goals (MDGs) and the sustainable development targets contained in action plans from the World Summit on Sustainable Development (WSSD) and other major UN conferences. Recent years have seen governments adopt a number of important goals and targets related to poverty reduction, environmental sustainability, population stabilization, and women's empowerment that would help promote greater human and environmental security. The MDGs, for instance, call for eliminating gender disparity in primary and secondary education and halving by 2015 the share of the world's people living in extreme poverty and lacking access to clean drinking water. The WSSD Plan of Implementation reiterated the importance of the MDGs and contributed a number of new international targets, including halving the proportion of people without access to basic sanitation by 2015, restoring fisheries to their maximum sustainable yields by 2015, and reducing the loss of biological diversity by 2010. The UN has an important role to play in working in concert with civil society and other actors to galvanize action to achieve these goals.

Fund environmental and social initiatives in the developing world. Translating existing environmental treaties and sustainable development action plans into greater on-the-ground action will require funding for international environmental institutions and initiatives such as the Global Environment Facility (GEF) and UNEP. The GEF commits an average of $300 million per year to grants for global environmental protection initiatives in the developing world and UNEP has an annual budget of roughly $100 million. But raising even these relatively small sums from donor governments has proven to be a continuing challenge. Other relevant international institutions and initiatives have also suffered from scarce funding, including efforts to provide universal access to basic reproductive health services for all by 2015, as called for at the 1994 International Conference on Population and Development in Cairo. Meanwhile, global military expenditures

> The decay of ecosystems has set the stage for more frequent and more devastating "unnatural" disasters: natural disturbances made worse by human actions.

currently add up to more than $800 billion annually.

Build environmental initiatives into post-conflict reconstruction efforts. Environmental damage incurred during armed conflicts slows the delivery of humanitarian aid and can also hinder redevelopment efforts. UNEP has documented the environmental damage in post-conflict Serbia and Montenegro, Afghanistan, and Iraq. Using such information, environmental protection should be integrated into the post-conflict reconstruction process. Methods for encouraging environmental protection include conducting environmental impact assessments, using environmentally friendly technologies, and maximizing information exchange between key stakeholders to avoid further risks to human health and the environment.

Promote open and transparent governance. Protecting environmental security requires open and transparent governance systems that discourage corruption and allow people affected by environmental damage to have a voice in decision-making. Toward this end, Principle 10 of the Rio Declaration on Environment and Development that emerged from the June 1992 Earth Summit stipulates that individuals are entitled to access information and judicial proceedings, as well as to be involved in decision-making. Six years later, this concept was enshrined in the legally binding June 1998 Aarhus Convention on Access to Information, Public Participation in Decision-making, and Access to Justice; other regional initiatives on public participation are under way in Latin America and in East Africa. The UN could encourage countries to abide by Principle 10 and take steps to ensure that UN processes and institutions themselves operate in a transparent and participatory manner.

Notes

1. Editor's note: Russian President Vladimir Putin signed the Kyoto Protocol on November 5, 2004, clearing the way for the international treaty to take effect in February 2005.

Water, Conflict, and Cooperation

ALEXANDER CARIUS, GEOFFREY D. DABELKO, and AARON T. WOLF

Fierce competition for fresh water may well become a source of conflict and wars in the future.
Kofi Annan, March 2001

But the water problems of our world need not be only a cause of tension; they can also be a catalyst for cooperation....If we work together, a secure and sustainable water future can be ours.
Kofi Annan, February 2002

Water poses both a threat and an opportunity for the UN system. Increasing scarcity of clean fresh water impedes development, undercuts human health, and plays critical roles along the conflict continuum between and within states. While rarely (if ever) starting a war between states, water allocation is often a key sticking point in ending conflict and undertaking national and regional reconstruction and development. Within states, water scarcity can assume an increasingly contentious and violent role when, for example, water-dependent sectors such as irrigated agriculture can no longer sustain farming livelihoods, leading to destabilizing migration flows. Conflict prevention, conflict resolution, and post-conflict reconstruction efforts ignore water at their peril in key regions of the world (e.g., Southern and East Africa, including the Great Lakes region; the Middle East; and Central, Southeast, and South Asia).

Water has also proven to be a productive pathway for confidence building, cooperation, and arguably, conflict prevention. Cooperative incidents outnumbered conflicts by more than two to one from 1945-1999 (Wolf, Yoffe, & Giordano, 2003). The key variable is not absolute water scarcity, but the resilience of the institutions that manage water and its associated tensions. In some cases, water provides one of the few paths for dialogue in otherwise heated bilateral conflicts. In politically unsettled regions, water is often essential to regional development negotiations that serve as de facto conflict-prevention strategies. The UN system and its partners have ripe opportunities to capitalize on water's cooperation promise while undercutting its conflict potential.

Water-Related Violence: What, Where, and How?

Water-related violence often occurs on the local rather than international level, and the intensity of conflict is generally inversely related to geographic scale (Wolf, 1999). Even if international disputes over water-related issues do not typically cause violent conflict, they have led to interstate tensions and significantly hampered development, such as along the Nile, Mekong, Euphrates, Amu Darya, Syr Darya, and Ganges rivers. And while conflicts often remain local, they can also impact stability at the national and regional levels.

The Basins at Risk project's analytical tool helps identify areas where hydrological and

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political conditions suggest a higher likelihood of conflict over water (Wolf et al., 2003). Based on extensive analysis of the world's 263 international river basins, the project hypothesizes that "the likelihood of conflict rises as the rate of change within the basin exceeds the institutional capacity to absorb that change." Sudden physical changes or reduced institutional capacity are more conducive to disputes. Key examples include uncoordinated development of major projects that affect flow (e.g., dams) *in the absence* of a treaty or commission; basins that suddenly become "internationalized," as occurred in post-Soviet Central Asia; and general animosity among parties. This approach provides a set of indicators for monitoring potential hot spots, thus allowing us to get ahead of the "crisis curve" and promote institutional capacity in advance of intractable conflict.

There are three major linkages between conflict and water:

1) ***Access to adequate water supplies:*** Conflict is most likely to occur over water when disputes involve access to water of adequate quantity and quality. Even when water supplies are not severely limited, allocation of water among different users and uses (urban residents and agriculture, for example) can be highly contested. Degraded water quality, which can pose serious threats to health and aggravate scarcity, is also a source of potentially violent disputes. Finally, when water supplies for broadly irrigated regions decline either in terms of quantity or quality, those declines can spur migrations that could politically destabilize the receiving cities or neighboring countries.

2) ***Water, livelihood loss, and civil conflict:*** Water's importance in sustaining human livelihoods can indirectly link it to conflict. Water is a basic resource for agriculture, which is traditionally the largest source of livelihoods. If this livelihood is no longer available, people are often forced to search for job opportunities in the cities or turn to other, sometimes illicit, ways to make a living. Migration—induced by lack of water, sudden droughts and floods, infrastructure construction (e.g., dams), pollution disasters, or livelihood loss—can produce tensions between local and incoming communities, especially when it increases pressure on already scarce resources. And poverty due to livelihood loss has been identified as a common denominator of the causes of conflict in most of the civil wars that emerged in Africa, South Asia, and Latin America during the last decade (Ohlsson, 2000).

3) ***Water management and conflict:*** In most cases, it is not the *lack* of water that leads to conflict, but the inadequate way the resource is governed and managed. There are many reasons why water management fails, including lack of adequate water institutions, inadequate administrative capacity, lack of transparency, ambiguous jurisdictions, overlapping functions, fragmented institutional structures, and lack of necessary infrastructure.

Water management is highly complex and extremely political. Balancing competing interests over water allocation and managing water scarcity require strong institutions. A reliable database, including meteorological, hydrological, and socio-economic data, is a fundamental tool for deliberate and farsighted management of water resources. Yet, reliable information is often difficult to obtain, especially in developing countries. Further, disparities among riparians' capacity to generate, interpret, and legitimize data can lead to mistrust and thus hinder cooperative action.

Water management in many countries is also characterized by overlapping and competing responsibilities among government bodies. Disaggregated decision-making often produces divergent management approaches that serve contradictory objectives and lead to competing claims from different sectors. And such claims are even more likely to contribute to disputes in countries where there is no formal system of water-use permits, or where enforcement and monitoring are inadequate. Controversy also

often arises when management decisions are formulated without sufficient participation by local communities and water users, thus failing to take into account local rights and practices. Protests are especially likely when the public suspects that water allocations are diverting public resources for private gain or when water use rights are assigned in a secretive and possibly corrupt manner, as demonstrated by the violent confrontations in 2000 following the privatization of the water utility in Cochabamba, Bolivia.

Water as a Pathway to Peace

Transboundary cooperation around water issues, which stems from a drive for sustainable development in the face of shared stress, has a long and successful history. This development imperative—not the fear of conflict per se—motivates countries to pursue tough, protracted negotiations such as the Nile Basin Initiative (NBI).

Aggressively pursuing a water peacemaking strategy can provide dividends beyond water for stakeholders. It can build trust and serve as an avenue for dialogue when parties are stalemated on other issues. Transboundary water institutions have proven resilient, even as conflict is waged over other issues (e.g., the "Picnic Table Talks" between Jordan and Israel, Mekong Committee, and Indus River Commission). This strategy can also establish habits of cooperation among states, some with little experience, such as the states in the Kura-Araks basin in the Caucasus, or the Central Asian states of the former Soviet Union.

Water can also be a key point in negotiating the end of a conflict, even if water did not precipitate it. While water did not cause the wars between India and Pakistan, for example, an updated agreement on the Indus River has played a central role in recent bilateral negotiations to end the conflict. In addition, peacemaking through water issues can forge people-to-people links, as demonstrated by the Good Water Makes Good Neighbors programs of the NGO Friends of the Earth Middle East or expert-to-expert (Track II) linkages along the Jordan or Indus rivers.

Finally, a water peacemaking strategy can create shared regional identities and institutionalize cooperation on a broader range of issues. Examples of this dynamic include the institutionalized environmental cooperation around the Baltic Sea during the Cold War (Helsinki Commission) and the current cooperation in post-apartheid Southern Africa through the Southern African Development Community (Conca & Dabelko, 2002).

The United Nations and Water, Conflict, and Cooperation

Gaps

Water is a powerfully unifying resource, but because of its centrality to human life and our ecosystem, its management is generally diffused among the world's agencies and institutions. The UN is no exception: water-related expertise is spread throughout the system, including such bodies as UN Development Programme (UNDP), UN Environment Programme (UNEP), United Nations Educational, Scientific, and Cultural Organization (UNESCO), United Nations Children's Fund (UNICEF), Food and Agriculture Organization (FAO), and the UN Economic Commissions, along with partners like the World Bank and the Global Environment Facility.[2] The fragmentation of this impressive expertise has historically prevented the UN from taking the lead in water-related conflict mitigation. To redress this problem, the UN system must integrate policy and coordinate its extensive but diffuse expertise on water, conflict, and cooperation across its bodies.

International waters: The UN should develop an integrated, systematic program of preventive water diplomacy based on modified versions of the World Bank and Global Environment Facility frameworks. This program would (1) bolster early warning for regions with potential for water conflicts (conducted by, for example, UNEP's Division of Early Warning and Assessment); (2) develop a

systematic program for enhancing institutional capacity between nations, including reconciling national legal frameworks (perhaps led by FAO's Development Law Service); and (3) craft, by unifying existing expertise, a "one-stop shop" for developing programs to enhance cooperation (such as UNESCO's recently launched Water Cooperation Facility). All these efforts should integrate traditional conflict-prevention bodies, such UNDP's Bureau for Crisis Prevention and Recovery, in both the design and use of these products and capacities.

The UN must address a number of gaps that impede the implementation of this systematic, integrated program. First, only a small number of experienced water-dispute facilitators are viewed as truly neutral. The World Bank has a few, but they are in short supply at other UN bodies. The UN system should rebuild its ability by recruiting and training facilitators in hydrology, international law, regional history, and conflict prevention (the Universities Partnership for Transboundary Waters offers a model for developing and executing this training).

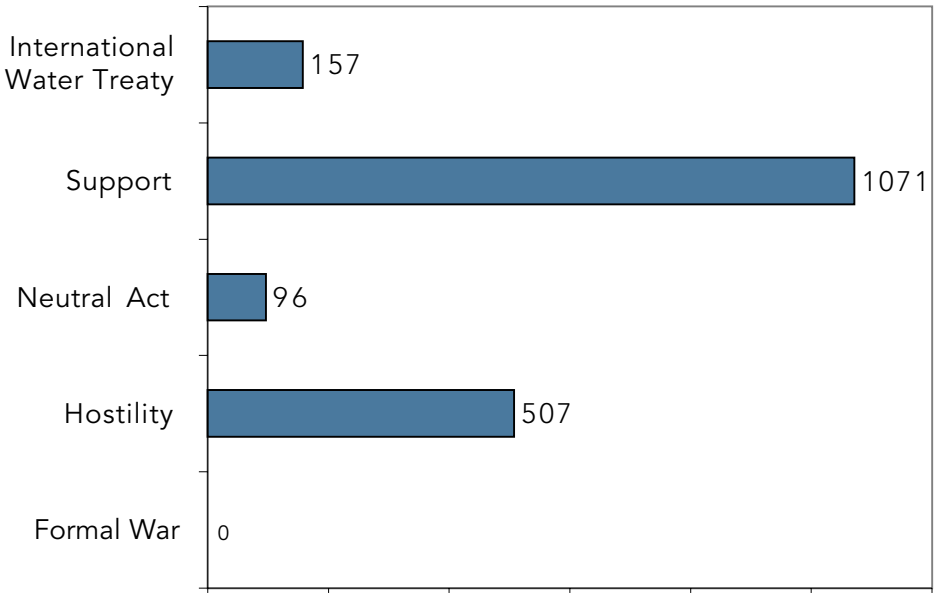
Second, UN conveners and facilitators, and their bilateral funders, must be willing to support long processes without requiring instant or easily measurable results. The World Bank's 20-year commitment to the NBI is an exemplary model, which the bank is reproducing in other African basins. The UN should extend this model beyond Africa and encourage disparate UN bodies to cooperate as equal partners. Third, to achieve sustainable implementation, the UN must find ways to include all stakeholders throughout the process, in order to offset the secrecy that traditionally surrounds high-level negotiations. Unlike the NBI, this should not wait until state-to-state agreements have been reached.

Finally, the UN should seek to strengthen the capacity of parties to negotiate contested water issues. Disparities in capacity and knowledge have often led to mistrust between riparian countries, hindering cooperative action. Strengthening the negotiating skills of less powerful riparians can therefore help prevent conflict, as can strengthening their capacity to generate and authorize relevant data (Turton, 2003). A hydrological database that is accepted by all stakeholders is essential for any joint management efforts, as it builds trust and enables water-sharing parties to make decisions based on the same understanding of the situation.

Headwaters of the Nile River, Uganda (Credit: Inger Andersen)

While pursuing this integrated program, the UN must avoid falling back on media-friendly but historically inaccurate scare tactics like warning of impending "water wars" between states. This is not the appropriate frame for these issues because (1) most organized violence from water conflict occurs not between states, but at the subnational and local levels or between sectors; (2) the "water wars" angle discourages the engagement of key developmental and environmental partners in favor of security actors; (3) it does not easily lead to a program of action for conflict prevention and human development; and (4) we do not need to use violent conflict to prove that water is a matter of life and death. Indeed, by directly or indirectly contributing to two million to three million deaths annually, unsafe drinking water poses a primary challenge to human security, as recognized by both the Millennium Development Goals and the Johannesburg Plan of Implementation.

State-to-State Water Interactions in Transboundary Basins, 1946-1999



Source: Adapted from Wolf, Yoffe, & Giordano (2003)

Intranational level: Many countries need stronger internal policies to regulate water use and to enable equal and sustainable management of their water resources. The UN should help strengthen the institutional and legal frameworks for managing water resources at the national level. To ensure that these national frameworks are implemented, the local level—at which water is actually used—requires more assistance (e.g., developing management institutions on the catchment level and institutionalizing community-based cooperative management mechanisms).

Regardless of the level of analysis, building capacity for integrated water management and conflict prevention is a critical role for the UN. Developing the human, technical, and administrative capacity to generate and analyze data, to develop sustainable management plans, and to implement these plans is necessary to enable water institutions to fulfill their management tasks and to prevent water-related disputes over the long term. Building capacity in conflict-management techniques, such as mediation and facilitation, as well as in stakeholder participation, helps mitigate conflicts and prevent disputes from emerging during decision-making.

Options

What form would a systematic, integrated program of preventive diplomacy and water take? Since most initiatives dealing with water, conflict, and cooperation are substantially underfunded and rarely reach beyond the project level, the challenge for the international community is to create an obvious earmark for international water conflict and cooperation funds, as the Global Fund is for HIV/AIDS, tuberculosis, and malaria. Such a fund could utilize water to build confidence and prevent conflict, assess water facilitation skills to match capacity and opportunities, and reduce the number of overlapping and duplicative bilateral approaches.

As part of its program, the UN should create a forum to identify and articulate the needs of Southern stakeholders for transboundary water management, dispute resolution, and conflict transformation. Such forums as the

World Commission on Water, Peace, and Security or the Water Cooperation Facility have already been proposed. The UN should also seek to integrate existing networks and platforms that address water and security linkages in the South.

In addition, water venues such as the 13th Commission on Sustainable Development in 2005, UN-Water, and the World Water Assessment Programme must move beyond technical management questions and situate water and development issues in a larger peace and security context, integrating lessons from ongoing efforts like UNESCO's Potential Conflict to Cooperation Potential (PCCP) program and UNEP's Post-Conflict Assessment Unit.[3] By collaborating with these water forums, UN bodies focused on conflict could support the environmental priorities outlined in the Secretary-General's 2003 interim report on prevention of armed conflict (United Nations, 2003).

Conclusion

By establishing a program of preventive diplomacy focused on water, the UN could coordinate its extensive but diffuse expertise. Such a program would assess basins at risk and bolster the early-warning process for regions with conflict potential. The program would also enhance institutional capacity between nations (by reconciling national legal frameworks over water issues, for example) and craft a "one-stop shop" with tools to develop programs that encourage transboundary cooperation. Through a Global Fund for Water—with special emphasis on understanding the Southern perspective and integrating conflict prevention units—the UN could improve water management and facilitation skills, reduce duplicate efforts, and use water to build confidence and prevent conflict.

Notes

1. This background paper builds on a policy brief on water and conflict commissioned by the Office of Conflict Management and Mitigation in the Bureau for Democracy, Conflict, and Humanitarian Assistance of the United States Agency for International Development (USAID); see Kramer (2004). For more information on USAID's Office of Conflict Management and Mitigation, visit http://www.usaid.gov/our_work/cross-cutting_programs/conflict/.

2. UN programs on water include the following:

• The Global Environment Facility (a partnership between the World Bank, UNDP, and UNEP) has an extensive program on international waters; see http://www.gefweb.org/.

• UNDP, through its program in Sustainable Water Management, developed an extensive toolkit for efficient water use and shepherded the Global Water Partnership; see http://www.undp.org/water/resource.html for more information. Since 1999, it has worked with the World Bank in an International Waters Partnership to "seek complimentarity in support of management of transboundary fresh water resources" (http://www.undp.org/seed/water/region/partner.htm). UNDP's Transboundary River Basin Initiative (TRIB) aims to foster inter-riparian dialogue to strengthen emerging basin institutions, and is currently providing focused support in the Mekong, Niger, Rio Frio, and Senegal basins.

• UNESCO's International Hydrologic Programme (http://www.unesco.org/water/ihp/index.shtml) is now beginning its seventh cycle. More recently, UNESCO coordinated the World Water Assessment Programme, designed to assess the state of the world's water resources (http://www.unesco.org/water/wwap). For international waters, UNESCO launched its Potential Conflict to Cooperation Potential (PCCP) program, designed specifically to collect, assess, and disseminate the world's experience in sharing international waters (http://www.unesco.org/water/wwap/pccp/index.shtml). It is investigating the possibility of a Water Cooperation Facility to help stakeholders manage international water disputes.

• UNEP's Division of Early Warning and Assessment (http://www.unep.org/dewa) provides early warning of environmental change; its mandate is to "help increase the capacity of governments to use environmental information for decision-making and action planning for sustainable human development."

• The World Bank is the lead agency in water resources development for poverty alleviation in the developing world; see http://lnweb18.worldbank.org/ESSD/ardext.nsf/18ByDocName/WaterResourcesManagement for more information. Through its regional desks and its International Waters Window, it has developed a comprehensive program for the management of international basins, including legal and political frameworks.

• The FAO Development Law Service and various UN Economic Commissions—notably the Economic Commission for Latin America and the Caribbean (http://www.eclac.cl) and the Economic and Social Commission for Asia and the Pacific (http://www.unescap.org)—have taken the lead in building legal capacity for water-related issues, both within nations and internationally. In addition, the International Court of Justice has decided on one case regarding international waterways, and the Permanent Court of Arbitration has recently broadened its expertise to include the arbitration of environmental disputes.

3. For a summary of PCCP's actions and recommendations to the Ministerial Conference of the Third World Water Forum in May 2003, see PCCP's *From Potential Conflict to Co-operation Potential: Water for Peace* brochure at http://www.unesco.org/water/wwap/pccp/pdf/brochure_2.pdf

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The Security Implications of Climate Change for the UN System

NIGEL PURVIS and JOSHUA BUSBY

This article explores the security implications of climate change, including a summary of the adverse impacts of climate change, an analysis of their security implications, and policy recommendations for strengthening the United Nations' capacity to respond to climate-related security threats.

Adverse Impacts of Climate Change

While significant uncertainties remain regarding the extent and speed of climate change, the overwhelming global scientific consensus is that the Earth's atmosphere is warming rapidly, perhaps at an unprecedented rate, and that much of this warming is due to human activity. The UN Intergovernmental Panel on Climate Change (IPCC), the multilateral body charged with assessing the implications of climate change, predicts that global warming will trigger enormous physical and social changes. The panel identified the following physical and socio-economic effects.

Physical effects

The likely physical effects of climate change include: (1) higher average surface and ocean temperatures; (2) more rainfall globally from increased evaporation; (3) more variability in rainfall and temperature, with more frequent and severe floods and droughts; (4) rising sea levels from warming water, expanded further by run-off from melting continental ice fields; (5) increased frequency and intensity of extreme weather events such as hurricanes and tornadoes; and (6) extended ranges and seasons for mosquitoes and other tropical disease carriers (IPCC, 2001a, 2001b). These changes are most likely to happen gradually, but scientists are increasingly concerned about the possibility of abrupt and catastrophic climate change, such as a sudden shift in the Gulf Stream that would leave Western Europe without the warm waters that keep its climate hospitable. The risk of abrupt climate change was serious enough to induce the U.S. Department of Defense to commission a 2003 report on the potential consequences for U.S. and international security (Schwartz & Randall, 2003; Woods Hole Oceanographic Institution, n.d.).

Socio-economic effects

Not all societal effects of climate change will be negative, but a number of adverse socio-economic impacts are anticipated. These effects include: (1) shortfalls in water for drinking and irrigation, with concomitant risks of thirst and famine; (2) changes and possible declines in agricultural productivity stemming from altered temperature, rainfall, or pest patterns; (3) increased rates and geographic scope of malaria and other diseases;

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(4) associated shifts in economic output and trade patterns; (5) changes and possibly large shifts in human migration patterns; and (6) larger economic and human losses attributable to extreme weather events, such as hurricanes.

Security Implications

The security implications of these physical and socio-economic changes are significant. We must first consider the nature of the threats and then consider where those threats are most likely to occur.

What kinds of threats?

Violence and Armed Conflict: Climate change will alter the distribution and quality of natural resources such as fresh water, arable land, coastal territory, and marine resources. Some researchers have speculated that these changes could cause or prolong armed conflict, although these arguments are often overstated. Indeed, the general link between the environment and armed conflict is well-established: competition for natural resources (e.g., diamonds, timber, oil, water, and even narcotics) has motivated violence in such disparate places as Kuwait, Colombia, and Afghanistan. Natural resources have also helped finance insurgencies in Angola, Sierra Leone, and elsewhere. The connection between climate change and the outbreak of violence will unlikely be as strong as when natural resources can be exploited for quick financial reward. And because climate change happens gradually, global warming is unlikely to be the primary cause of any particular armed conflict, nor will its contribution to conflict be particularly visible. Nevertheless, regional climate changes, as with other causes of environmental degradation, could make armed conflict more likely.

Natural Disasters and Humanitarian Crises: As explained above, a warmer world will generate more natural disasters and therefore more humanitarian crises. Indeed, natural disasters are already a major security threat: between 1990 and 1999, an estimated 188 million people per year were affected by natural disasters, 6 times more than the 31 million annually affected by armed conflict.[1] Many people affected by natural disasters become refugees or internally displaced persons (IDPs). Both refugees and IDPs are vulnerable not only to the physical and socio-economic effects of disease, malnutrition, and loss of income, but they can also become personally insecure and subject to crime, violence, and broader militarized conflict. Natural disasters become wider security challenges when a country lacks the capability or willingness to help affected populations, undermining the government's legitimacy and increasing popular grievances.

Destabilizing Forces: Conditions of drought, disease, and economic stagnation may reach critical levels or tipping points beyond which state failure becomes more likely**.** The global HIV/AIDS pandemic, for example, has renewed international concern that widespread death from infectious diseases could destabilize vulnerable nations. In countries where one in four people is infected with HIV, failure to provide treatment could easily destroy the ability of government institutions to provide effective security, education, and health care. The spread of disease from climate change could have a similar effect, although perhaps at a slower rate. A recent study from the World Health Organization (WHO) and the London School of Hygiene and Tropical Medicine estimates

there may already be upwards of 160,000 deaths annually from ancillary effects of global warming such as malaria and malnutrition. The study's authors estimate those numbers could nearly double by 2020.[2]

Which states are most vulnerable?

Security risks related to climate change will not be evenly distributed and will affect some kinds of governments more than others. While local and regional consequences of climate change remain very difficult to predict, three types of nations seem particularly vulnerable to the security risks of climate change: least-developed nations, weak states, and undemocratic states.

Least-Developed Nations: Poor developing countries are the perhaps the most likely to suffer the effects of climate change. These states lack the economic, governance, or technical capabilities to adapt; for example, they lack the capacity to prevent or react to humanitarian disasters such as widespread flooding. Tropical developing nations face the most severe consequences of climate change, including extreme weather events, drought, and disease.

Weak States: Failed and failing states—those with weak government institutions, poor border control, repressed populations, or marginal economies—stand a higher risk of being destabilized by climate change. Weak states have almost no capacity to respond to climate change or prevent it from triggering a large-scale humanitarian disaster. Drought, crop failure, and subsequent state failure led to tens of thousands of deaths in Somalia in the 1990s. Vulnerability to drought in the Darfur region of Sudan is now exacerbated by the country's ongoing internal conflict. Whether these droughts are attributable to climate change is impossible to say, but the episodes are indicative of what one would expect with global warming.

Undemocratic States: Twenty years ago, economist Amartya Sen noted that democracies, in which leaders have to be responsive to people who can vote them out of power, do not produce famines. In contrast, the 20th century is replete with examples of undemocratic regimes failing to protect populations at risk of drought, floods, and other weather-related phenomena. While modern India has never suffered a famine, tens of millions died in China under Mao. North Korea is able to produce nuclear weapons but remains unable to meet its people's basic nutritional needs. Populations in undemocratic states will therefore be particularly vulnerable to the more numerous and more severe humanitarian crises induced by climate change.

Recommendations for the UN System

The United Nations' strategy for addressing climate change is to facilitate agreements among nations to: (a) mitigate those nations' greenhouse gas emissions, thereby stabilizing atmospheric concentrations of these gases at a safe level; and (b) help vulnerable nations adapt to the adverse consequences of global warming. While these goals are the right ones, the UN system is not acting with sufficient ambition or effectiveness to deal with the security risks posed by climate change. Several new approaches are discussed below.

Emissions mitigation

Global warming will continue until concentrations of greenhouse gases in the atmosphere stabilize, which will only occur after net global annual emissions of these gases decline to zero. Given that global emissions are still *rising* rapidly in the majority of nations, a major focus of the UN's climate-change security strategy must be to facilitate emissions abatement in both developed and developing nations. Global efforts to arrest climate change have been carried out largely in the context of the 1992 UN Framework Convention on Climate Change and its 1997 Kyoto Protocol. To date, those efforts have produced very modest results. Developed nations largely ignored the political commitment they made under the convention to return their emissions to 1990 levels by 2000. Even if the Kyoto treaty goes into force, it will cover only 25 percent of global emissions

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and not those of the United States and China, the world's two largest national emitters.[3] By 2012, Kyoto will have reduced emissions in participating industrialized countries by only less than 3 percent below 1990 levels. Unless major new efforts are made to mitigate climate change, global warming will overwhelm most governments' adaptive efforts.

The climate architecture associated with the Kyoto Protocol has become increasingly divisive, not only among advanced industrialized countries, but also within the North-South dialogue. Since the 1992 Earth Summit, the environment has also lost ground politically, submerged under the broader sustainable development agenda. To speed mitigation efforts, the secretary-general must raise the visibility of climate change and play a more active role in overcoming obstacles to emissions mitigation. One complication is that while developed nations should take the lead in reducing emissions, emissions abatement in developing nations could be more cost effective. Until the international community develops the political will necessary for public and private financing of emission reductions, climate change is likely to continue indefinitely.

Raising the profile of climate change is easier said than done, particularly since imminent security challenges, such as Iraq, tend to crowd out long-term security threats. While the secretary-general should integrate climate change more fully into his own personal diplomacy, a more formal institutional mechanism would give the issue consistent attention. One option would be for the secretary-general to advocate the creation of a UN High Commissioner for the Environment. The high commissioner's mandate would be to raise global awareness about environmental degradation, including climate change, and to shine a spotlight on best and worst environmental practices. Climate would be only part of the agenda, as this official should also have a role in building political will to meet other international environmental goals, such as providing safe drinking water and sanitation for all. Locating the office in Geneva would help integrate environmental concerns and climate change into the UN system in a way that the UN Environment Program in Nairobi has been unable to accomplish. The position would be a compromise between nations that have advocated the creation of a World Environment Organization, such as France and Germany, and those that have opposed efforts to strengthen global environmental governance.

Adaptation

Concentrations of atmospheric greenhouse gases are higher than they have been for tens of thousands of years—and these concentrations will climb for many decades, even if the mitigation agenda succeeds. A two-part strategy is needed to deal with the inevitable adverse effects of climate change. First, the UN should strengthen those programs that handle disaster and humanitarian crises and that are already beginning to take climate change into account. Second, the UN should create a new effort focused on predicting, preventing, and handling climate change-related disasters in weak states and those with repressive governments.

1. Strengthening Ongoing Disaster Work

Shift priority from relief to prevention: Humanitarian organizations have become increasingly adept at emergency response to emerging catastrophes. However, very little money is spent on disaster risk reduction. Even

among countries with responsive decision-makers, there is too little awareness of the priority of disaster-risk reduction. One strategy that has been proposed is to dedicate at least 5 percent to 10 percent of humanitarian relief monies to disaster-risk reduction. While the precise target should be resolved by member states, the secretary-general should take the lead in proposing the establishment of such a principle. The UN's Inter-Agency Task Force on Disaster Reduction (IATF/DR) and the Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR) are existing frameworks in which early-warning systems and vulnerability assessments are already embedded to some degree.[4] In January 2005, the Second World Conference on Disaster Reduction will take place in Kobe, Japan. The parties will review the 1994 Yokohama Strategy on natural disasters and establish the disaster-reduction action plan for the next decade. These processes provide opportunities to focus more prominently on prevention.

Integrate disaster and climate planning: The UN system needs to integrate concerns about the consequences of climate change more fully into its security, natural disaster prevention, and humanitarian response activities; for example, the UN should make climate change a more explicit focus of UN/ISDR. In 2003, UN/ISDR launched a project to do just this, and its progress seems promising.[5] IATF/DR created a new working group in May 2004 on climate adaptation and disaster reduction, and the UN/ISDR Secretariat is coordinating an expert dialogue among disaster relief, climate, and development communities (UN/ISDR, 2004). As adaptation gains prominence in the global warming community, however, climate change bodies are in danger of reinventing the wheel on disaster prevention and response. The existing network of disaster experts should be more fully integrated into the IPCC reporting process to avoid this potential problem.

2. New Strategy Needed for Vulnerable States

While stronger UN early warning and disaster preparedness systems would help predict and address disasters, these systems still would not be entirely adequate to address the most dangerous security challenges, including massive migration, armed conflict, and state collapse, which are most likely to occur in undemocratic and weak states. A new multipart strategy is needed to address these challenges.

Improve early warning systems and vulnerability indices: The UN system needs better tools for predicting which states and regions are most vulnerable to severe security threats related to climate change. There is already a proliferation of early warning systems in the international community for dealing with different challenges. In the humanitarian realm, there are numerous systems; for instance, the UN's Humanitarian Early Warning System is an internal UN tool to identify countries in pre-crisis situations. Reliefweb, also overseen by the UN's Office for the Coordination of Humanitarian Affairs (OCHA), is an external system that focuses on natural disasters and complex emergencies. At the regional and country levels, OCHA has an Integrated Regional Information Network, primarily for sub-Saharan Africa. In agriculture, FAO has the Global Information and Early Warning System on Food and Agriculture, and USAID has its Famine Early Warning System. In terms of weather-related warning systems, UN Development Programme and UN Environment Programme/GRID have developed a Disaster Risk Index, and the World Bank and Columbia University have nearly completed a Global Disaster Risk Hotspots project.

Much of this work is positive. But the emerging early warning systems in the disaster reduction community must take political indicators of vulnerability, such as the repressive nature of political regimes and other governance factors, more fully into account (Brauch, 2003). In addition, coordination among the vulnerability indices mentioned above, along with other early warning systems like the European Union's Global Monitoring for Environment and Security initiative, is necessary to standardize risk assessments in a format policymakers can use (European Council & European Space Agency, 2004). The climate-

security nexus, moreover, should be analyzed systematically by the IPCC. As a first step, the IPCC should convene a conference that engages international security, climate, and disaster experts (German Federal Ministry for the Environment, 2002).

Preventative diplomacy: Once the UN has identified high-risk countries, it should develop contingency plans for the consequences of climate change. The extent to which the UN is already involved in systematic forward planning is not clear. As a first step, any contingency plans ought to be tailored to the individual circumstances of those countries and include plans for providing shelter, nutrition, medicines, and policing. At the same time, local UN staff (or, if necessary, special envoys) ought to open discreet channels of communication with decision-makers in high-risk countries to discuss and encourage risk-reduction strategies. UN officials should also share information concerning disaster prevention with relief agencies such as the UN High Commissioner for Refugees, the International Red Cross, and the broader NGO relief community.

Conflict and post-conflict engagement—Legitimacy and force: Sometimes, however, diplomatic preparedness will not head off humanitarian catastrophe, and the world will be faced with the prospect of using force to prevent mass starvation or destabilizing migrations. The security risks of climate change, therefore, need to be a factor in debates about a standing multilateral peacemaking or humanitarian intervention force. The international community needs to revisit norms and institutional arrangements concerning the use of force in response to disasters just as it is doing with respect to terrorism and weapons of mass destruction. The UN should be facilitating this dialogue while also including potential climate-induced catastrophes in its programs for post-conflict reconstruction.

Weak states have almost no capacity to respond to climate change or prevent it from triggering a large-scale humanitarian disaster.

Conclusion

Climate change will trigger profound global change, and these changes could pose genuine risks to international peace and security. Managing these changes well will require well-conceived actions within the UN system. While climate change could contribute to armed conflict and violence, that is not the primary risk. Preventing large-scale humanitarian catastrophes from climate-related droughts, floods, crop failures, mass migrations, and exceptionally severe weather remains the most significant policy challenge.

The UN needs to improve substantially the effectiveness of international efforts to mitigate emissions. Not only should the secretary-general incorporate climate change into his own personal diplomacy, he should consider advocating the creation of a new senior-level office (the High Commissioner for the Environment) that would be charged with building political support for addressing all global environmental challenges, including climate change, in ways that promote sustainable development.

Because significant climate change is already occurring and will continue for decades, the UN must place equal emphasis on helping nations adapt to global warming. In this regard, the UN system needs to work even harder to prevent and respond to humanitarian crises, which will increasingly be fueled by climate factors. Because disasters in which climate change plays a role will be difficult to predict, and because little will distinguish these disasters from traditional humanitarian crises, much of what the United Nations must do should not be specific to global warming. Many of the UN's existing disaster efforts are on the right track, but these efforts need to be strengthened by shifting emphasis from disaster response to prevention and by integrating awareness of the consequences of climate change into their work programs.

Yet the UN system must also launch a new effort aimed at dealing more directly with the security risks associated with humanitarian disasters in weak and totalitarian states, where climate change is most likely to trigger regional insecurity. Here, the UN needs to develop powerful analytic tools, such as a fully coordinated vulnerability index, that are capable of reliably flagging populations at risk of suffering the

worst consequences of climate change. The UN also needs to beef up its preventative diplomacy, possibly through the creation of a senior-level disaster prevention coordinator. Finally, the security risks associated with climate change need to be factored into any discussions about multilateral intervention and the development of new norms and institutional arrangements regarding the use of force.

Notes

1. The report defined people affected by natural disaster as those who for a time either lost their home, animals, crops, livelihoods, or health as a result of a natural disaster; see UN/ISDR (2003).

2. See Doyle (2003); Haines & Patz (2004); WHO (2002); and WHO (2003).

3. Editor's note: Russian President Vladimir Putin signed the Kyoto Protocol on November 5, 2004, clearing the way for the international treaty to take effect in February 2005.

4. The Inter-Agency Task Force is chaired by the Under-Secretary-General for Humanitarian Affairs. See UN/ISDR (n.d.).

5. The infolink is a collaboration between the International Red Cross/Red Crescent Centre on Climate Change and Disaster Preparedness, UNDP, and ISDR. See Red Cross/Red Crescent Climate Centre (n.d.).

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NEW PUBLICATIONS

The Security Demographic: Population and Civil Conflict After the Cold War

Richard P. Cincotta, Robert Engelman, & Daniele Anastasion
Washington, D.C.: Population Action International, 2003. 101 pages.

Reviewed by **JACK A. GOLDSTONE**

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The debate over the connection between population and social welfare is centuries old. Analyses of population growth's relationship to civil strife are much newer, but still span several decades.[1] It is therefore striking that Richard Cincotta, Robert Engelman, and Daniele Anastasion have developed a conceptually fresh approach—one with a surprisingly heartening view of the future.

Where most discussions of population and conflict have focused on factors like population size, growth rates, or density, Cincotta et al. argue that a country's vulnerability to conflict depends on its place in the "demographic transition." Countries in the early phases of this transition, they conclude, are most prone to civil violence; in contrast, countries that have completed the transition are more stable.

Populations are stable when birth and death rates (especially childhood death rates) are very high. These conditions prevailed throughout most of the world before the late 20th century. Populations are also stable when birth and death rates are very low; only the most developed nations have arrived at this stage. The path taken by countries from a high birth/high death rate equilibrium to a low birth/low death rate equilibrium is known as the demographic transition.

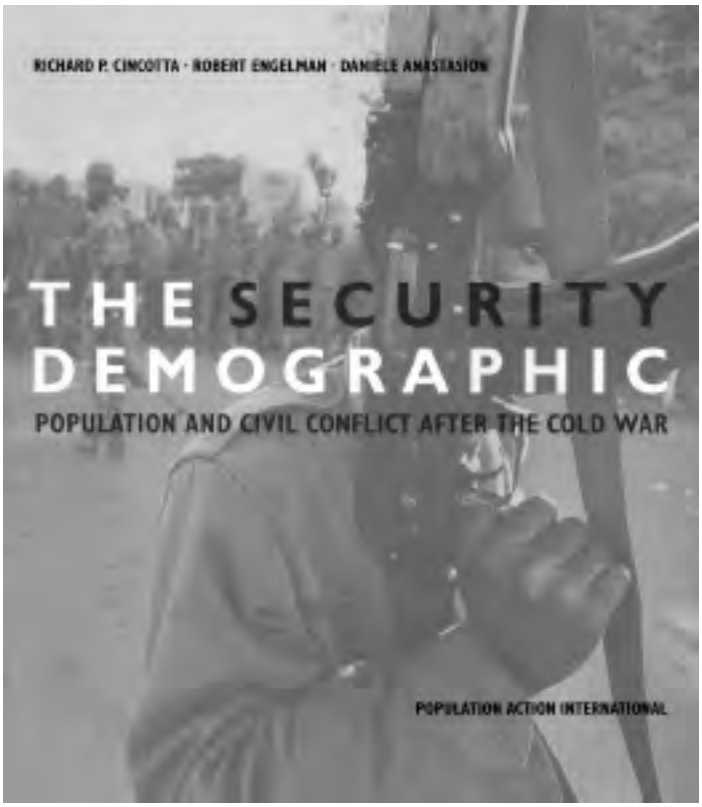
Most of the countries in Europe, North America, and Australia/New Zealand completed this transition by the early 20th century, and many of the countries of East Asia, and a few others like Brazil and Thailand, reached this stage in the last 20 years. However, most of Africa, the Middle East, South and Southeast Asia, and Andean Latin America are still in the early or middle stages of the transition.

As countries move out of the high birth/high death rate equilibrium, the death rate falls first, as improvements in public health, sanitation, and basic medicines sharply reduce child mortality from common diseases. Birth rates tend to fall later and more slowly, as societies gradually realize that children are more likely to survive to adulthood. Toward the end of the transition, families have fewer children, and invest more in each of them; these smaller families generally enjoy higher levels of nutrition, education, and opportunity.

However, in the early stages of the transition—when death rates have fallen but fertili-

ty remains high—the population grows extremely rapidly, sometimes doubling in a single generation. Population growth is concentrated among youth, since the largest component of falling death rates is reduced infant and child mortality. This creates a substantial "youth bulge"—a disproportionate share of men and women in their teens and early twenties compared to mature adults. This baby boom often outpaces society's ability to establish and staff schools, leading to inadequate education. Job markets also fail to keep up, reducing employment and social mobility of these large and often ill-equipped youth cohorts. Young men and their families, facing shortages of cropland and water, flock to cities seeking employment, leading to an urban explosion. Thus, early transition societies often suffer from a surplus of unemployed youth, chaotic and overgrown cities, and shortages of renewable resources—the conditions, according to Cincotta et al., that make a developing society prone to conflict.

Although this is highly plausible and seems consistent with recent civil conflicts, which have mostly occurred in early and middle-stage countries, it is difficult to prove that demographic factors are really *the* causal determinant of conflict. Other scholars have argued that economic growth, stable currency, and strong investment can absorb labor surpluses and encourage people to invest in education and training; thus, strong economic performance can trump demography. In addition, good governance (e.g., low levels of corruption, stable and secure property rights) can enable societies to cope with rapid population growth, attracting investment and directing it where needed.[2] More negatively, a strong authoritarian government can contain social tensions and prevent civil conflict, as demonstrated by the long corrupt reigns of Suharto in Indonesia, Mobutu in Zaire, Moi in Kenya, and many others. Since the number of countries in the early or middle stages of the democratic transition with strong economies or good governance is small, it is nearly impossible to disentangle these factors through statistical analysis.



To their credit, Cincotta et al. have chosen a simple method that addresses most of these problems. It is not technically sophisticated—quite the reverse—but there are virtues in its simplicity. The authors rank all the countries by the size of their youth bulge, the rate of urban population growth, and their per capita scarcity of cropland and fresh water. Countries that rank high, medium, and low on these factors are then compared to data from the Uppsala Conflict Data Program to determine the proportion that experienced an outbreak of new civil conflict in the 1990s.[3] They find that high-risk countries tend to have 1.5 to 2.3 times as many conflicts as low-risk countries. Rapid urban growth and youth bulge return the strongest correlation, while scarcity of renewable resources is a slightly weaker factor.

Critics may complain that this procedure does not adjust for economic or political institutions or performance, and that by ignoring ongoing conflicts (only *new* outbreaks of conflict in the 1990s count as evidence), the data

The Security Demographic brings us good news: as the world moves toward the end of its demographic transition, the rate of civil conflict should decline.

disregard a substantial portion of global civil strife. All true, but Cincotta et al.'s principal finding is too strong to ignore: among 25 countries with rapid urban growth and a large youth bulge in the 1990s, 40 percent developed new conflicts during that decade, compared to only 14 percent of the 57 countries without those factors (page 73). This powerful association suggests that even if other factors play a role in causing civil conflict, they must be strongly associated with the status of the country's demographic transition.

By focusing on the position of countries along the demographic transition, rather than simply on population size, growth rate, or density, Cincotta et al. have made a major contribution to the debate on population and conflict. Their evidence—simple, but stark and stunning—demonstrates the power of the demographic transition to explain a country's vulnerability to civil violence.

As a bonus, *The Security Demographic* includes a valuable chapter on the progress of the HIV/AIDS pandemic and its likely effects on population. Unfortunately, there is not enough data from the 1990s to test the impact of AIDS on conflict (although HIV infection rates are high, mortality has only skyrocketed in the last few years), so this section is somewhat speculative. However, the authors conclude that countries with the highest rates of AIDS will likely experience more conflict, due to the loss of skilled professionals, workers, and military men in the prime of life.

This monograph is remarkably clear and easy to follow, rich in illustrative maps and graphs ideal for teaching or policy briefings. Each section concludes with a summary of key findings and policy prescriptions. It should be widely read and circulated among policymakers, as well as students studying political instability.

The authors' policy prescriptions will be familiar to those who work in the health arena, as they echo prevailing wisdom: improve education, especially for women, and increase access to reproductive health services. The report's evidence, however, gives these old recommendations new strength. The authors do not simply offer prescriptions to halt population growth (as if growth itself were a bogeyman); rather, they recommend helping countries transition to smaller families that can invest more resources in each child. This state appears to offer the greatest stability and least conflict—the "security demographic" of the title.

The Security Demographic brings us good news: as the world moves toward the end of its demographic transition, the rate of civil conflict should decline. That goal seems eminently desirable and worthy of vigorous promotion from the highest levels of government to the smallest villages.

Notes

1. For pioneering work, see Moller (1968) and Choucri (1974, 1984). More recent and detailed analyses were undertaken by Goldstone (1991, 1999) and Homer-Dixon and his collaborators (1998). The connection has also been the subject of many policy papers and briefings cited by Cincotta et al.

2. This is the "new" thinking in development economics; see Collier et al. (2003) and Acemoglu, Robinson, and Johnson (2001).

3. Visit the Uppsala Conflict Data Program at http://www.pcr.uu.se/research/UCDP/UCDP_toplevel.htm

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Cities Transformed: Demographic Change and Its Implications in the Developing World

Panel on Urban Population Dynamics, Mark R. Montgomery, Richard Stren, Barney Cohen, & Holly E. Reed (Eds.)
Washington, D.C.: National Academies Press, 2003. 505 pages.

Reviewed by **BARBARA SELIGMAN**

Barbara Seligman is currently a senior policy advisor with the Office of Population and Reproductive Health at the U.S. Agency for International Development.

Prepared by the National Research Council's Panel on Urban Population Dynamics, *Cities Transformed: Demographic Change and Its Implications in the Developing World*[1] is a welcome contribution to a field sorely in need of such a synthesis. Published in 2003 after three and one-half years of deliberation, its principal observations and recommendations are carefully considered, empirically supported, and always compelling.

Chaired by Mark R. Montgomery, who holds appointments at both the Population Council and the State University of New York at Stony Brook, and Richard Stren of the University of Toronto, the panel prepared a comprehensive review of existing literature and data on the significance of place (i.e., theories explaining why urban areas differ from rural); the developing world's urban transition; and urban population growth, economic development, and governance. They also addressed the relative health advantages or disadvantages of urban areas, paying particular attention to reproductive issues and children's health.

If this volume had a dust jacket, its blurb might read: "Newsflash: by 2030 most Americans will not recognize the names of the world's largest cities or of the countries they are in." According to UN population projections (notwithstanding their imperfect quality), almost all of the world's population growth in the foreseeable future will occur in urban areas of less developed countries. While the developing world, including Eastern Europe, had only 3 cities with 5 million people or more in 1950, by 2015 it will have 49—nearly 5 times as many as the industrialized world. India will have no fewer than nine of the world's largest cities. Two will be in Bangladesh, a country

Newsflash: by 2030 most Americans will not recognize the names of the world's largest cities or of the countries they are in.

about the size of Wisconsin, with a per capita GDP of $1,600 (Population Reference Bureau, 2003), which is unlikely to improve substantially over the projection period.

By 2025, a stunning 50 percent of Africa's population will live in cities, challenging the common wisdom that urbanization is synonymous with industrialization. While urban growth itself should not be a cause for alarm, the high rate of growth, driven by natural increases in the apparent absence of economic growth, is both a "cause and symptom of the economic and social crises that have enveloped the continent" (World Bank, 2003).

It should not be surprising, then, that the panel finds evidence—albeit slim—that the urban advantage in infant and child survival is eroding in some sub-Saharan countries. Although the data considered by the panel do not show an urban health penalty, they successfully dispel the notion that city residents always enjoy better health. In the few cases where data permit, health indicators for the poor in small towns, or other areas of spatially concentrated poverty, look as bad—if not worse—as those for their rural cousins. For example, while infant mortality rates declined in urban Kenya and in the city of Nairobi in the 1990s, they increased in rural Kenya and Nairobi's slums. The panel concludes that the "urban poor suffer from deprivations that can sometimes leave them no better off than rural residents, but generally situate them between rural residents and the urban non-poor" (page 195).

Similarly, living in the city does not significantly improve the reproductive health of poor women in urban Africa, with one notable exception: urban residents—rich or poor—are much more likely to receive skilled attendance when giving birth. The other reproductive health indicators fail to show a clear advantage; for example, the incidence of mistimed and unwanted pregnancies is not appreciably lower in cities. In addition, data measuring the quality of reproductive health services available to the urban poor indicate that these services are just as inadequate in cities as in rural zones.

Where data allow us to look at interurban differences, they can be illuminating: cities with under 100,000 residents, for example, have the most inadequate reproductive health services. As urban populations swell in the poorest countries, we can expect that more data will challenge the assumption that cities provide better health care. Yet, without data that differentiate urban zones by size, we will not know whether such cases are exceptions or part of a larger phenomenon.

Many of the panel's recommendations concerning data and analysis merit the attention of donors and policymakers. Some appear fairly easy to implement; the panel offers several suggestions, for example, that would allow researchers to use data from the demographic and health surveys (DHS) to examine intraurban differences. Mindful not to tax an already overburdened survey, the panel points out only a few changes that would greatly enhance the survey's ability to monitor the effects of urban growth on key health indicators. As the next generation of DHS is launched, there are encouraging signs that the panel's recommendations are being seriously considered (Jacob Adetunji, personal communication, June 2004).

The panel also addresses the growing interest in unequal access and use of health services, including reproductive health services. Without information on household income, national measures of relative wealth employ asset indices that almost always weight rural and urban residents equally. This concentrates rural residents in the poorest sections of these wealth indices; such analysis obscures useful and important spatial information.

Similarly, a single asset index does not accurately capture the relative wealth of rural popu-

lations. For example, agricultural land is often negatively weighted in asset indices because it is associated with rural areas, which are disproportionately represented in the poorest quintiles. However, agricultural land in rural areas is a wealth-contributing asset. The negative weighting of agricultural land is prima facie evidence that these asset indices do not accurately rank wealth in rural areas. This poorly understood subject warrants further attention.

As the panel advises us, our tendency to create and rely upon data sources and analytical approaches that minimize spatiality can obscure information about the health effects of the urban dynamics dramatically changing the face of our planet. To improve the health and welfare of the new urbanites in Abidjan, Belo Horizonte, and Chongqing, we will have to know more than the names of their towns—we will need data that can accurately depict their cities' transformation.

Notes

1. *Cities Transformed* is available online at no cost at http://books.nap.edu/catalog/10693.html

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Ecological Security: An Evolutionary Perspective on Globalization

Dennis Clark Pirages & Theresa Manley DeGeest
Lanham: Rowman and Littlefield, 2004. 284 pages.

Reviewed by **JON BARNETT**

Jon Barnett is a senior lecturer in the School of Anthropology, Geography, and Environmental Studies at the University of Melbourne. He received his doctorate from the Australian National University in 1999. He is the author of *The Meaning of Environmental Security,* published by Zed Books in 2001.

In the aftermath of September 11, security discourse downplayed the "soft" subject of the environment in favor of harder targets. Instead of being a liability, environmental security's reduced prominence may provide a unique opportunity for scholars to escape the limits imposed by policy imperatives. One of the first substantial works in this field to appear since the terrorist attacks, *Ecological Security: An Evolutionary Perspective on Globalization* by Dennis Pirages and Theresa DeGeest, offers a refreshing new conceptual framework that moves beyond political constraints.

Ecological Security analyzes both globalization and environmental problems from an "eco-evolutionary" perspective, which seeks to understand the changing relationship between people and their environment over time. This historical method is key to understanding environmental security, however it is defined, but only Mische (1992) and, to a lesser extent, Dalby (2002) have adopted this approach.

Pirages and DeGeest call for a "totally new security paradigm" that "means moving ecological wisdom and evolutionary processes to the core of strategic thinking in order to provide a more relevant definition of security" (pages 20-21). According to the authors, attaining ecolog-

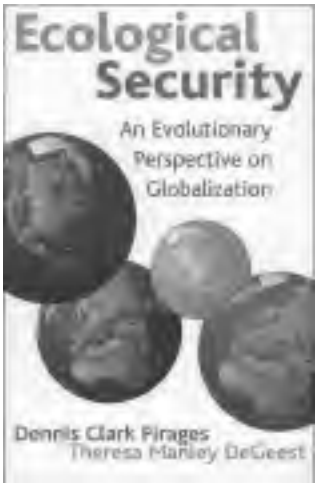
ical security depends on preserving four balances:

- Between human demands for resources and the ability of natural systems to provide these;
- Between the demands of human populations and other animals;
- Between medical care and pathogenic micro-organisms; and
- Among the resource needs of different human populations.

This new—and quite specific—way of understanding security is justifiably deemed "ecological" due to its unique focus on other species and on micro-organisms.

Pirages and DeGeest do not provide a "more relevant definition of security," however, nor do they offer a cogent definition of ecological security itself. It is not clear whom or what they believe ecological security will secure. They suggest that the security referent is any one (or all) of the following: ecosystems, the animals we compete with for resources, the United States, developing countries, and humanity. These are not mutually exclusive categories, but the book does not fully explain the synergies among their security interests. When the authors claim that "past industrialization clearly has made a substantial contribution to social progress and has had an overall positive impact on ecological security" (page 190), they imply that only some groups of people are secured, rather than all people, other species, or ecosystems.

Chapter 2, "Demographic Change and Ecological Insecurity," identifies rapid population growth in developing countries as a principal cause of ecological insecurity, and blames this growth on outdated "pro-natalist norms" (page 33). Pirages and DeGeest argue that in the later stages of a country's demographic transition, birth rates fall because the "beliefs and norms governing reproduction change" (page 34). Yet birth rates fall due to more material processes, like increased wealth and opportunity, and therefore tackling the structural causes of poverty is ultimately the best



way to slow birth rates. The shallow analysis of people's reasons for having fewer children does not convince the reader that those who favor broad-based poverty reduction approaches over targeted family planning have impeded ecological security.

"An Assault on the Global Commons" continues the polemical tone by opening with an unsubstantiated statement about the environment's influence on social life:

> Environmental conditions have played an important role in shaping the nature of societies. In general, environments of plenty, with temperate climates, abundant food supplies, and mineral wealth, have offered opportunities for civilizations to flourish. Environments of scarcity, by contrast, have often shaped "Spartan" societies, characterized by more authoritarian political rule and frequent conflict with neighbors. (page 55).

It would take more than one book review to list all the counterexamples to this statement; for one, the history of temperate Europe is replete with totalitarianism and conflict. To support this utterly meaningless claim, the authors refer only to Karl Wittfogel's *Oriental Despotism* (originally published in 1957) and two works by Thomas Homer-Dixon. Very few social scientists would agree that social life is a function of—or can be explained by—the environment in this way. Luckily, this poor scholar-

ship is completely out of character with the rest of the book.

The wide-ranging discussion of energy security in Chapter 4 covers the history of oil production, contemporary energy geopolitics, and supply and demand in energy markets. Pirages and DeGeest sensibly and logically promote renewable energy as the key to achieving energy security. However, except for greenhouse gas emissions, the problems discussed in this chapter are not clearly ecological. The authors state, for example, that "the long-term ecological security problem for the United States, and eventually the rest of the world, is one of an imbalance between future demand for and reserves of petroleum" (page 85). Even though this claim falls under the ambit of the first of the book's "four balances," it does not correspond to any recognized definition of *ecological*. But this is a small quibble; energy scarcity is undoubtedly a security problem—even if not ecological—and this chapter cogently outlines its dimensions.

"The Political Economy of Feast and Famine" is also only loosely related to ecological security. Had Pirages and DeGeest argued that overpopulation and environmental degradation cause famine and malnutrition, these problems might fit the definition of ecological problems. Instead, they recognize that poverty, migration, HIV/AIDS, armed conflict, trade, and investment also play critical roles in food insecurity. Indeed, the section titled "Africa: A Malthusian Tragedy" owes little to Malthus; rather than simply grounding Africa's food problems in overpopulation, the authors acknowledge that political economy processes structure food supply. While entirely correct, this conflicts with Chapter 1, which accepts the notion of "carrying capacity" as a driver of "Malthusian dramas" like famine (page 22).

In "Globalization and Biosecurity," Pirages revisits some of his earlier work on the balance between human populations and pathogenic micro-organisms, and discusses the competition between human beings and other animal species—both novel and genuinely ecological problems. The strongest and most convincing chapter in the book, it explains not only the biological, but also the geographic, economic, and environmental causes of disease.

"Globalization and Biosecurity" is the strongest and most convincing chapter in the book; it explains not only the biological, but also the geographic, economic, and environmental causes of disease.

Chapter 7 examines the interactions between technological change and security. Like Ulrich Beck's 1999 work *World Risk Society*, Pirages and DeGeest imply that it is more difficult to manage risk when there are global dangers, such as nuclear and biological weapons, and when personal and social welfare depends on complex interlocking technological structures like computer networks and telecommunications systems. This chapter links technology's advances and its ever-widening influence to increased pollution and resource consumption, reflecting the book's eco-evolutionary perspective.

Finally, *Ecological Security* offers conclusions and solutions. "Ecologically Secure Development" focuses not on solutions, as the title implies, but on the constraints limiting them. Even so, it provides a good overview of the power of free market processes to prevent sustainable development and support insecurity and inequality. The authors recommend a "fundamental change in definitions of progress and the good life" (page 204), and boldly suggest that "some actual sacrifices by the countries of the Global North" are necessary (page 201).

The last chapter outlines governance changes that would facilitate this transformation, arguing that "distributive justice must become a global public good" (page 218), and that political globalization—"an active process of building governance beyond the state"—is an important step towards ecological security

(page 219). A short epilogue distills these arguments into 10 key steps to enhance ecological security, including: adopting an eco-evolutionary perspective, considering future generations in decision-making, developing new global institutions, creating and financing new public goods as opposed to commodifying all goods and services, and nurturing a cooperative and moral approach to international issues.

If readers begin with the book's fourth chapter, they will encounter a logically argued, well-researched, well-written, and sometimes innovative series of discussions loosely based on the concept of ecological security. Despite some problems in its early chapters, *Ecological Security's* historical perspective and creative approach offers new insights for even the most jaded student of environmental security.

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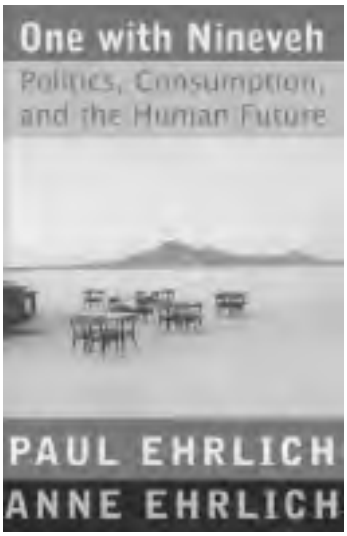

One With Nineveh: Politics, Consumption, and the Human Future

By Paul Ehrlich and Anne Ehrlich
Washington, D.C.: Island Press, 2004. 334 pages.

Reviewed by **DENNIS PIRAGES**

Dennis Pirages is Harrison Professor of International Environmental Politics at the University of Maryland, College Park. He is author or editor of 15 books, including *Ecological Security: An Evolutionary Perspective on Globalization* (Rowman & Littlefield, 2004).

Thirty-six years ago, a young biologist named Paul Ehrlich issued a warning about the dire consequences of rapid population growth in his book, *The Population Bomb* (1968). Over the following decades, Ehrlich (often in collaboration with his wife Anne) authored numerous prescient and authoritative works on the world's mounting demographic, environmental, and resource problems. The Ehrlich's latest effort, *One With Nineveh: Politics, Consumption, and the Human Future*, is a reasoned and well-documented book that ties together and expands upon many of their classic themes.

The book takes its title from Rudyard Kipling's poem "Recessional" about the fallen Assyrian capital of Nineveh, the ruins of which lie near the contemporary Iraqi city of Mosul. The Ehrlichs observe that just as pride and arrogance led to the collapse of ancient Mesopotamian societies, similar hubris could lead to the downfall of today's global civilization. Rulers of these early empires fought wars and built costly monuments while ignoring the environmental decay undermining their societies. In a striking parallel, the U.S. government refuses to ratify the Kyoto Protocol, while pursuing a costly military venture in the Middle East and unveiling war memorials in Washington. The so-called war on terrorism dominates newspaper headlines, while the steady deterioration of humanity's life support systems is given only scant space.

One With Nineveh begins with an overview of the elements of the contemporary human predicament, including inadequate fresh water, collapsing world fisheries, loss of biodiversity, increased pollution, the specter of communicable disease, and, more recently, climate change. The authors identify the principal forces battering the global environment: population growth, overconsumption, and dangerous technologies. But then they venture into new territory, turning from the environmental to the political, posing philosophical questions for domestic and international environmental agendas. Since wealth and power are closely connected, and both are linked to overconsumption, the Ehrlichs advocate opening a dialogue on limiting the accumulation of personal wealth and establishing the rights and responsibilities of property owners in a more densely populated world.

Following its impressive and well-reasoned overview of the links between environmental and socio-political problems, *One With Nineveh* concludes with a menu of recommended policy reforms. While all are laudable—and most make sense—many require the wealthy and powerful to permit destruction of the hierarchy upon which their power and privilege depends. In an ideal world, people would be more environmentally aware; global population would fall rapidly to the recommended two billion; power and privilege would be widely shared; and technology would be harnessed to reduce pollution and resource depletion. But the book leaves unanswered the most important question: how do we get there from here?

The book's recommendations beg three questions. First, what are the limits to non-growth? Over the last three decades, Paul and Anne Ehrlich have performed an invaluable service by calling attention to the dangers of rapid population growth and surges in resource consumption. Their solution requires that global population rapidly decline until it levels off around two billion. But just as there are limits to population and consumption growth, rapid decline has its own perils. Whether we like it or not, economic growth is tightly woven into the fabric of capitalist societies. A significant drop in population and consumption could have an alarming impact, including a plummeting stock market, a rise in corporate bankruptcies, dwindling tax revenues, reduced social services, less funding for research and development, and—much closer to home for some of us—eroding foundation and university endowments. Not a pleasant future for those caught in the transition to a world one-third of its current size.

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The situation in the former Soviet Union may shed some light on the possible consequences of non-growth. Population and consumption began a significant decline soon after the fall of communism, and the Russian people have paid a heavy price during the transition. The population is now declining at 0.7 percent annually; if this trend continues, today's population of 145 million will shrink to 119 million by 2050 (Population Reference Bureau, 2003). The years since the fall of the wall have been marked by high unemployment, a dramatic surge in disease, increased alcoholism and drug use, and a significant drop in life expectancy (Feshbach, 2003). Fortunately, some of the misery has been alleviated by economic aid from the United States and European Union. But if this decline occurred on a global scale, there would be no outside sources of support and the consequences would be much harsher. Despite

this, I am not arguing that a gradual reduction in world population is undesirable. However, abrupt demographic change can have significant consequences: just as rapid population growth detonated a bomb, a sudden decline in population could create a debilitating bust.

Second, the Ehrlichs give shabby treatment to the power of technological innovation to solve some of these problems. While they do refer to technology as a two-edged sword, they cling to the Ehrlich-Holdren I = PAT formula in which environmental impact (I) is a function of population (P) multiplied by affluence (A) and then multiplied again by the impact of technology (T). This implies that technology is responsible for increasing environmental impact. But technology can solve environmental problems as well as create them—the choice is clearly ours. Just as technological innovation in agriculture has averted worldwide famine (at least for the present), technological innovation could solve some of the consumption and pollution problems associated with increasing affluence. The technology to increase automobile mileage and cut pollution is available, but political cowardice and perverted public policy keep driving Hummers and other ugly, overweight gas-guzzlers out of automobile showrooms and onto our crowded highways.

Finally, the book's focus on how the concentration of power and privilege increases consumption and environmental deterioration raises fundamental questions. Since the Depression, three generations of Americans have defined the good life in terms of profligate consumption. Economists continually beat the drums urging us to consume more to ensure a healthy economy. Politicians promise to stimulate economic growth in order to get elected. This does not foster voluntary simplicity. Of course, there is no intrinsic reason to associate happiness with NASCAR and private trips into space. People could learn to appreciate literature, art, plays, hiking, and other low-impact activities. But how do we radically change the course of our socio-cultural evolution?

The current social and economic situation in the United States does not seem conducive to a reversal. The number of U.S. millionaires (excluding home equity) jumped from 2 million in 2002 to 2.27 million in 2003, while the number of "ultrarich" worth over $30 million in the United States and Canada grew to 30,000 in 2003 (Frank, 2004). While the Ehrlichs hope that the very rich might use their money to establish philanthropic foundations, they are more likely to spend it on multiple homes and luxury cars. It is hard to imagine how to slow the considerable momentum of global wealth concentration. Just as the Titanic's passengers partied into the night, confident that the ship was unsinkable, the rising tide of millionaires and near-millionaires is caught up in a frenzy of consumption, supremely confident that their wealth and possessions will insulate them from any bad times to come.

In *One With Nineveh*, the Ehrlichs have masterfully tied pressing global environmental problems to their socio-political and economic origins. They also have initiated an important discussion examining the roots of our contemporary human predicament. They make a strong argument for reintroducing population, consumption, and power issues into public discourse. This book is must reading for all those in positions of power and privilege—unfortunately, an unlikely scenario. We should continue to explore the critical question—how can *Homo sapiens* escape the consumption trap while public discourse focuses on a seemingly endless war against terrorism?—or risk suffering the same fate as Nineveh.

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Red Sky at Morning: America and the Crisis of the Global Environment (A Citizen's Agenda for Action)

James Gustave Speth
New Haven, CT: Yale University Press, 2004. 275 pages.

Reviewed by **FREDERICK A.B. MEYERSON**

Frederick A.B. Meyerson, Ph.D., is a visiting scholar at the Population Reference Bureau and is currently writing a book about U.S. population policy and its environmental consequences, to be published by Smithsonian Books in 2005. He can be reached at fmeyerson@prb.org.

"With more than two decades of dilatoriness behind us, it is now an understatement to say we are running out of time. For such crucial issues as deforestation, climate change, and loss of biodiversity, we have already run out of time" (page 9). Gus Speth's readable, carefully written, and often eloquent book, *Red Sky at Morning: America and the Crisis of the Global Environment,* repeats a familiar warning, first issued more than 40 years ago by Rachel Carson in *Silent Spring*.

Both an autobiography by one of the environmental movement's major players and a collection of the best ideas and observations of his generation, *Red Sky at Morning* is important reading for anyone interested in the history and future of environmental policy. Speth's firsthand accounts, opinions, and ruminations are real gems. To confront global environmental threats, he relates, "the international community framed and implemented an inadequate, flawed response—weak medicine for a very ill patient" (page 100). "My generation is a generation, I fear, of great talkers, overly fond of conferences. On action, however, we have fallen far short" (page 8). Speth seeks to remedy these historical shortcomings with *Red Sky at Morning's* call for a "transition to sustainability."

Weary Warrior

Currently the dean of the Yale School of Forestry and Environmental Studies, Speth cofounded the Natural Resources Defense Council (NRDC) in 1970, fresh from Yale Law School and a Supreme Court clerkship. He went on to chair President Carter's Council on Environmental Quality (CEQ), found and head the World Resources Institute, run the United Nations Development Programme, and advise the Clinton administration. His credentials and opportunities to shape the world of environmental policy could not possibly be more impressive. Speth was—and still is—in a position to make a difference.

It is therefore very significant that his book has a discouraged and wistful air, with chapter titles like "A World of Wounds" and "Anatomy of Failure." While he tries to maintain an upbeat tone by concluding with an ambitious agenda for action, Speth is clearly a weary warrior. The first and most revealing half of *Red Sky at Morning* focuses on the failures of the environmental movement and our collective inability to stem global environmental deterioration: "The current system of international efforts to help the environment simply isn't working. The design makes sure it won't work, and the statistics keep getting worse" (page xii).

Treading Water

I first met Gus Speth in the summer of 1979, when I was an idealistic college intern at the Environmental Protection Agency and he was chairman of the CEQ. At that moment, both institutions seemed near the center of the American political universe, following the preceding decade's cavalcade of important environ-

mental legislation. In 1980, Speth released CEQ's *Global 2000 Report to the President*, a seminal work that brought global warming to the public consciousness, part of an apparently rising tide of environmental awareness and action. In hindsight, however, its publication at the end of the Carter administration was the high-water mark of the American environmental era.

In the 1960s and 1970s, as Speth relates, new environmental laws targeted the low-hanging fruit. Since then, there have been a few startling successes, such as the Montreal Protocol, but on most critical issues like biodiversity and climate change, we have been treading water—or worse. Speth reminds us that nearly all of the environmental problems now facing the world have been known for a quarter century. He laments that "little has been done…. If I were a young person being handed this problem by indulgent predecessors, I would be angry" (page 5).

Drivers and Solutions

In the second half of his book, Speth provides a convincing depiction of 10 drivers of environmental destruction (population, affluence, technology, poverty, market failure, policy and political failure, economic growth, the economic system, our culture and values, and globalization). This thorough but daunting list encompasses almost the entire human endeavor. However, although Speth spends several pages describing the environmental challenges of continuing global population growth, he curiously omits any mention of U.S. growth, which, at more than three million people per year, surpasses all but China and India (and trumps both of these giants in terms of environmental impact).

To confront these various threats, Speth says, "The principal way to a sustainable world is to apply major resources of time and money to the promotion of eight broad, linked transitions that seek to define and redirect growth" (page 152), such as transitioning to environmentally benign technologies, environmentally honest prices, sustainable consumption, a stable or smaller world population, and a world free of mass poverty.

These utopian ideas are attractive, but the language and suggested means may appeal more to policy wonks than revolutionaries. Freedom from mass poverty, environmentally benign technologies, and environmentally honest prices, for example, can only be actualized (if at all) by big government, large NGOs, top-down policies, and well-connected cognoscenti. These are the same forces that Speth criticizes for failing to get the job done over the last several decades. So when he suggests that citizen activists contribute to hundreds of environmental organizations (listed—but frustratingly unranked—in the book's final section), it is both overwhelming and a little anticlimactic. If that approach has not worked for the last 30 years, why will it work in the future?

Grand Old Men

The Economist (2004) called Speth "one of the grand old men of greenery." Therein lies his great wisdom and genuine appeal, but also the root of the environmental movement's most serious problem: it has aged, growing from its strident, bold, and energetic youth into a more conservative, cautious, and sometimes resigned middle age. In the 1970s, the scruffy, chaotic, shoestring atmosphere of the World Wildlife

Fund, NRDC, and other enviros fostered scrappiness, improvisation, and risk taking. Today, if you stroll into the offices of many environmental NGOs, you will encounter marble and glass lobbies, well-coiffed receptionists, and soft elevator music—trappings barely distinguishable from those of large corporations and law firms.

Many environmental groups also suffer from the problems plaguing the corporate world, such as CEOs who pay themselves too much, conflicts of interest, and insider deals for wealthy patrons. Boards are populated by titans of industry, wealthy investors, and professors emeriti: environmentalism has grown up and grown comfortable. It is an old-growth forest, ripe for a major disturbance and rebirth.

"The environment is becoming more central to business strategic planning….New partnerships between corporations and environmental NGOs are being forged," Speth writes (page 187). This is true, but is it the solution or part of the problem? Much of the environmental movement now suffers from the pragmatic conservatism bred by financial entanglement. The major NGOs are now successful enough that they test the wind rather than throwing caution to it. When the revolution goes mainstream and corporate, how do you keep the revolution going? Speth's book doesn't look inward enough to address this quandary.

Pulling Punches

Speth would like to rally us to action, but there is a cognitive dissonance between *Red Sky at Morning*'s apocalyptic warnings, Speth's frustration at the movement's failures, and his calm presentation of proposed solutions. He may have pulled a few punches for political reasons. The book, like the man who wrote it, has a gentle touch. In person, you can feel the fire inside him, but on paper, he is more measured. Speth is a reasonable voice among radicals, a synthesizer, and a coalition builder. He likely would not have been chosen to lead great institutions if he were a fire-breathing dragon, but his generous qualities are also limitations in a war that he characterizes as a desperate downhill slide.

In that regard, I wish Speth had subjected the movement to a more critical analysis. Who are the good and bad apples? In retrospect, what would Speth have done differently to avoid producing what he calls a "toothless legacy of treaties"? What can we do differently in the future? Can his proposed solutions really work, given what we know about human nature? Some of these difficult questions are raised towards the end of *Red Sky at Morning*, but they are largely left unanswered. This may be too much to ask of Speth in this middle chapter of his life. The book is therefore an invaluable and compelling history, but perhaps not an adequate blueprint for a troubling future. I look forward to a strong sequel.

Passing the Torch

Like other "grand old men" (and women) of his extraordinary generation, Speth has devoted most of his life to environmental causes. Indeed, he recognizes that he is on the verge of passing the torch: "It will soon become a new generation's struggle. We must help them get prepared for this difficult assignment" (page xiv). His sixth recommendation is "knowledge and learning": to create what "is needed for the transition to sustainability" and to train a new era of environmental professionals. He expresses hope for "the spark that can set off a period of rapid change…the Environmental Revolution of the twenty-first century" (page 198). If the next generation questions authority as much as Gus Speth did at the outset of his amazing journey, they might create that spark.

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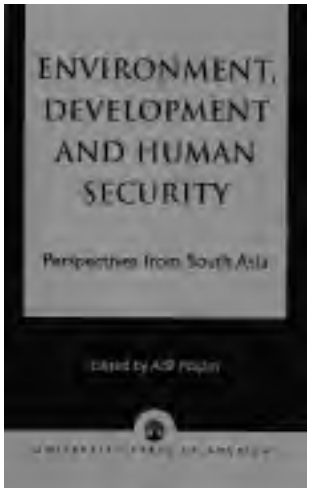

Environment, Development and Human Security: Perspectives From South Asia

Adil Najam (Ed.)
New York: University Press of America, 2003. 286 pages.

Reviewed by **NAVROZ K. DUBASH**

Navroz K. Dubash is a senior fellow in governance and public policy at the National Institute of Public Finance and Policy in New Delhi, India. His current work examines the political economy of infrastructure reform, focusing on social and environmental concerns.

For the last 15 years, scholars have contested the definition, key explanatory variables, and methodological approaches of environmental security, spanning the distance from traditional interstate security to the broader concept of human security. These fundamental debates have become heated at times; for example, in ECSP's 2003 report, Thomas Homer-Dixon locked horns with Nancy Peluso and Michael Watts over the nature of violent conflict: should theorists privilege environmental scarcity as an explanatory factor, as Homer-Dixon asserts, or should they begin with the political economy of resource access and control, as Peluso and Watts argue?

Into this theoretical thicket Adil Najam and his colleagues have injected *Environment, Development and Human Security: Perspectives From South Asia.* Avowedly empirical, the book is not preoccupied with untangling theory: it seeks "neither to posit a new conceptual framework…nor to put any of the existing frameworks to the test of empirical evidence emerging from South Asia" (page 245). Instead, it focuses on developing a "better policy sense…of how the twin challenges of environment and human security are intertwined" (page 245).

Environment, Development and Human Security reproaches the theoretical genuflecting that has characterized recent environmental security literature. "Most of our authors," notes Najam, "seem to find these 'hot' intellectual debates uninteresting if not irrelevant to the problems [with which] they are grappling" (page 250). Instead, the volume asks, what is relevant to South Asia's on-the-ground practitioners?

Poverty, the authors discover, is a key element linking environmental degradation to insecurity—and to a greater extent than currently recognized. The South Asian experience suggests that poverty may even be *required* for environmental degradation to lead to violent conflict. This finding, and the exploration that informs it, is framed in the language of "human security," which redefines security as freedom from pervasive threats to people's rights, safety, or lives.

The book approaches the nexus of environment, development, and human security from two angles: country studies and natural resources. The country studies—on India, Pakistan, Bangladesh, Sri Lanka, and Nepal—contain a store of detailed information. Four of the five (Nepal is the exception) survey the nation's environmental status and examine its security implications; the Pakistan and Sri Lanka chapters also include case studies. As is too often the case with this genre, the surveys are more informative than illuminating, and therefore a little dry. A sharper analytical edge would have made them more engaging; the Pakistan chapter by Shaheen Rafi Khan, for example, intriguingly deviates from the standard template to examine Pakistan's environment through the lens of vulnerability.

The book's analyses of environment and security linkages are livelier. The Bangladesh chapter by A. Atiq Rahman, Zahid H. Chowdhury, and Ahsan U. Ahmed establishes four categories of linkages: national sovereignty, livelihoods, health, and ecology. The Pakistan chapter uses a model of direct effects (those based on institutional gaps and failures) and indirect effects (those that operate through poverty). Both of these models are useful organizing tools and yield greater insights than the survey sections. However, given the book's empirical mandate, these models are not fully developed, and the diversity of approaches prevents cross-country comparisons. While Najam praises this analytical eclecticism for producing a broader range of findings, the chapters' empirical material might have benefited from more theoretical cogency.

The case studies shed the burden of comprehensiveness in search of explanatory depth. For example, Rahman et al. recount the remarkable story of a misguided and mismanaged dam on Bangladesh's Karnaphuli River that pushed an indigenous community out of their forest refuge, leading to a quarter century of armed conflict that ultimately threatened Bangladesh's political stability. Similarly, Sarath W. Kotagama's case-rich chapter on Sri Lanka describes a community displaced by a national park, illustrating the occasionally antagonistic relationship between the environment and human security.

Ajaya Dixit and Dipak Gyawali's chapter on Nepal is worthy of separate comment; it eschews the survey approach in favor of a human security argument centered on multiple "securities in conflict," which are tied to perceptions of risk and mechanisms for coping with it. The authors convincingly recommend using institutional pluralism to negotiate these disparate notions of security.

The remaining three chapters discuss natural resources—energy, land, and water—in the context of environment and development. In their tightly structured discourse on energy and security, Najam and Kumudu Gunasekera outline "energy paths" over time and organize them by efficiency, energy dependence, and environmental security. The graphs illustrating the chapter capture, at a glance, patterns across South Asia.

Khalid Saeed's chapter on land use projects food and land-related trends for 14 countries using a system dynamics model. Even though the model's structure is presented diagrammatically, it is hard to understand. Moreover, even though more recent data are available, the inputs date from 1987. It is hard to believe the author's claim that an additional decade of data would not affect the results. Perhaps most problematically, Saeed does not delve any deeper than country-level data, which is particularly egregious in a human security framework. For example, an analysis of different consumer classes' access to food under conditions of stress would have added to his argument.

Ramaswamy R. Iyer's chapter on water begins intriguingly by warning that applying a security framework to environmental problems could be dangerous. Instead of improving security, he fears, the interaction may damage environmental discourse. In his discussion of flood management, water quality, and water sharing, Iyer limits his use of "security" to interstate relationships. However, when he addresses cooperation, he adopts a wider view, issuing an impassioned and convincing plea to escape the intellectual straitjacket of supply-side thinking that has dominated water management in South Asia for the past decades.

By steering clear of theoretical debates, the volume loses some of its power to convince the reader, as illustrated by two examples drawn from the editor's "five key lessons." First, Najam makes a strong case that these essays demonstrate the value of locating environment and security within the rubric of sustainable development. However, without exploring the literature on security, how can the reader understand why we should retain the language of security, as opposed to subsuming the entire discussion in sustainable development? Second, Najam critiques the mainstream security discourse for over-emphasizing resource abundance at the

Environment, Development and Human Security reproaches the theoretical genuflecting that has characterized recent environmental security literature. Instead, the volume asks, what is relevant to South Asia's on-the-ground practitioners?

expense of institutions and governance. Engaging the substantial literature on political ecology, and its efforts to understand causal mechanisms beyond scarcity and abundance, would have strengthened this argument.

This said, through its diverse disciplinary perspectives, its focus on societies rather than states, and its empirical examples, *Environment, Development and Human Security* is a worthy contribution to what Barnett (2003) calls the "third wave" of environment-security scholarship. The book's empirical focus on one of the world's most vulnerable regions reminds academics to stay grounded instead of drifting away from practitioners' concerns.

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Security and Environment in the Mediterranean: Conceptualizing Security and Environmental Conflicts

Hans Günter Brauch, P.H. Liotta, Antonio Marquina, Paul F. Rogers, & Mohammad El-Sayed Selim (Eds.)
Berlin: Springer, 2003. 1136 pages.

Reviewed by **EVAN VLACHOS**

Evan Vlachos is a professor of sociology and civil engineering at Colorado State University and associate director of the International School for Water Resources.

Upon receiving this massive volume, I marveled at its sheer size: its 1136 pages include 321 illustrations, 2 forewords, 4 prefaces, 13 parts, and 52 chapters, not to mention a truly expansive bibliography, copious footnotes, website addresses, and assorted appendices. *Security and Environment in the Mediterranean* boasts an impressive roster of Mediterranean specialists and scholars in security, social, and environmental studies addressing conflicts and cooperation, theoretical approaches and methodological challenges, and political and economic developments in this fascinating and ever-evolving region.

Due to the encyclopedic compilation of topics and its diverse authorial styles, the book is difficult to evaluate. Yet, thanks to the editors' careful attention to structure and coherence, it is not just a collection of vaguely related papers. Instead, five key themes clearly emerge from the text. First, the book focuses on the dramatic transformation of our complex and interdependent world. The global environment is rapidly changing, due to degradation of natural resources and anthropogenic impacts, such as overpopulation, hyperurbanization, and agricultural innovations. At the same time, the search for peace and security has become a central preoccupation. Second, the book addresses the "fall of paradigms" after the turn of the 21st century and the pivotal

events of September 11, 2001. Throughout the volume, earlier theoretical approaches—namely, Hobbesian/Machiavellian (pessimistic), Kantian (normative), and Grotian (pragmatic or internationalist)—are juxtaposed with more interdependent conceptual models.

Security and Environment in the Mediterranean posits a new understanding of security in the context of social-economic-political-environmental conditions; this theme is closely related to the fourth key theme, which investigates the overlap between development and security. Security is broadly defined to encompass survival, social well-being, and eradication of poverty and exploitation. Finally, the fifth major theme is a normative (teleological) approach that emphasizes goals and visions. I was struck by the association of such terms as "dignity" and "degradation" with the search for security (see Chapter 14, for example). Such visionary thinking is consistent with the pronouncements emerging from recent scientific conferences and United Nations programs, such as the Millennium Development Goals.

A note of caution: when considering these shifting and emerging paradigms, we must carefully separate ideological orientations from visionary aspirations. This is particularly true when discussing confrontations between the Middle East and circum-Mediterranean countries. Long-standing historical grudges have often interfered with dispassionate efforts to encourage negotiation, mediation, or conflict resolution.

Any collection of this size contains a few uneven chapters. The first essay, however, deserves close reading; its detailed introduction to the evolution and interdependence of Mediterranean security makes the essential point that cooperative security concepts emerged to manage the end of the Cold War.[1] The next chapter on the Mediterranean ecoregion's fragmentation is particularly impressive; its exhaustive and well-footnoted analysis of definitions, schools of thought, and world views includes a valuable introduction to vulnerability and its centrality to ongoing theoretical and methodological efforts. Michael Lund's

"Prevention of Violent Conflicts" contains a useful policy toolbox for conflict prevention that addresses underlying socio-economic causes, intermediate political and institutional factors, and a range of triggers and events (pages 173-174).

The volume's look at NATO is mostly pragmatic and descriptive, although Peter Liotta's "Military and Environmental Security" in Part III includes an insightful analysis of the new emphasis on human and environmental security and the move away from the old *security* dilemma to a new *survival* dilemma. Liotta competently discusses socio-political forces that can lead to either global fragmentation or integration. Similarly, in "From Cooperative Security to Security Partnership in the Mediterranean," Antonio Marquina describes how alliances like NATO reconceptualize traditional security as human survival. Bechir Chourou's "Conceptualizations of Security" notes that national security is often confused with a particular regime's security, using examples drawn from the Maghreb region.

By now, the metamorphosis from traditional security to all-encompassing human survival is quite familiar. Many of the book's authors

In its desire to be all-inclusive, the volume has ballooned to an almost prohibitive size—I sympathize with the poor undergraduate who has to haul this hefty collection around campus!

introduce environmental concerns and emphasize the multilateral efforts of the European Union, World Bank, and others to avoid a strictly "securitized" view of the environment; see, for example, "Environmental Security: Conceptual Contestation and Empirical Relevance in the Mediterranean" by Stacy D. VanDeveer. This chapter marks the transition from the first half's overview of security concepts to the second half's look at environmental viability, including the role of population, climate, desertification, water scarcity, food security, urbanization, and natural disasters. Finally, the last section ("Empirical and Theoretical Results and Conceptual Conclusions") underlines the need for conceptual clarity, cooperative activities, and case studies, and argues that scholars should continue to search for underlying causes rather than simply discussing symptoms.

In such a large collection of diverse papers—with many semantic and linguistic side trips—it is difficult to separate the interesting from the important. Some chapters are repetitious, and in its desire to be all-inclusive, the volume has ballooned to an almost prohibitive size—I sympathize with the poor undergraduate who has to haul this hefty collection around campus! By the end I was tired of reading text that had appeared in earlier chapters; editing out the overlapping material would have lengthened the reader's attention span, which is already taxed by continuous summaries and summaries of summaries.

Despite (or because) of its extensive footnotes, abundant diagrams, and summarizing tables, I would recommend this book as an important addition to any library on environmental security. I am perplexed, however, that such a large and conceptually demanding volume would target an undergraduate audience. This specialized volume is difficult reading; I cannot envision using it in any undergraduate curriculum. On the other hand, scholars and graduate students, if they can afford its significant price ($159), will find this a great collection of conceptual clarifications, important data, methodological considerations, hard-to-find references, historical trends, and succinct summaries of convoluted international treaties and excruciating international negotiations.

In all, *Security and Environment in the Mediterranean* will reward the patient reader. Bechir Chourou closes his careful analysis in Chapter 47 with a definition of security in the context of different cultures and backgrounds:

> No nation can insure its survival alone. The Europeans understood this back in 1957 and acted upon it. The Arabs understood the need for concerted action even earlier (1948) but did little about it….[The] Euro-Mediterranean dialogue should henceforth focus on creating a new mentality, which recognizes that the future hinges not on short-term security but on long-term survival, and that survival can no longer be considered as the exclusive or preordained right of the fittest. (page 841).

A great summary for this challenging volume.

Notes

1. More recently, the security community has turned its attention to the rising North-South asymmetric interdependencies (page 317).

The Global Threat of New and Reemerging Infectious Diseases: Reconciling U.S. National Security and Public Health Policy

Jennifer Brower & Peter Chalk
Santa Monica: RAND, 2003. 146 pages.

Reviewed by **ANDREW PRICE-SMITH**

Andrew Price-Smith is assistant professor of environmental science and policy at the University of South Florida. Recent works include *The Health of Nations: Infectious Disease, Environmental Change, and Their Effects on National Security and Development* (MIT Press, 2002) and *Downward Spiral: HIV/AIDS, State Capacity, and Political Conflict in Zimbabwe* (United States Institute of Peace Press, 2004).

The emergence, re-emergence, and proliferation of infectious diseases in the modern era have given rise to a growing body of literature examining the effects of contagion upon nations. The earliest pioneers, historians such as William McNeil and Alfred Crosby, argued that human history has been significantly influenced by biological parameters, including the effects of pathogenic micro-organisms. These bio-historians were later joined by political scientists like Dennis Pirages, Robert Ostergard, Stefan Elbe, David Fidler, Mark Zacher, and Yanzhong Huang, and by intelligence analysts such as David Gordon and Don Noah. Collectively, their works form the basis for the growing field of health security. Microbiologist Jennifer Brower and political scientist Peter Chalk throw their hats into the ring with *The Global Threat of New and Reemerging Infectious Diseases,* a timely look at the United States' public health policy and its effects on national security.

Despite the wealth of research to draw upon, Brower and Chalk strangely ignore prior literature in the field. They claim, rather grandiosely, that theirs is the first book to comprehensively link disease to national security. By failing to give credit where it is due, they undermine sections of the book that are derivative of other work—notably, David Gordon's reports on behalf of the National Intelligence Council (Gordon, 2000).

The book is conceptually muddled. At first, the authors proclaim that they intend to adopt a human security focus on the individual. However, the rest of the book analyzes the effects of disease upon *national* security, thus employing explicitly state-centric concepts. In addition, it suffers from some serious omissions. For example, the authors ignore the role of war and poverty in amplifying disease, and their discussion of climate change neglects the effects of temperature on microbial incubation and insect biting rates.

Even with its analytical shortcomings, *The Global Threat of New and Reemerging Infectious Diseases* is a decent health security primer, which may be useful for students, policymakers, and laymen. The authors used solid data and conducted some enlightening on-site interviews with political figures in regions seriously affected by epidemic disease (such as sub-Saharan Africa). Their timely analysis of South Africa's HIV/AIDS epidemic examines how disease demoralizes citizens and undercuts civil society. While their prediction that South Africa will become unstable by 2010 may seem pessimistic, growing evidence supports the hypothesis that high rates of HIV/AIDS can undermine state capacity and social cohesion, particularly when accompanied by poor governance. (This argument might have been enhanced by a breakdown of HIV/AIDS' effect on the economy and foreign investment.)

While the prediction that South Africa will become unstable by 2010 may seem pessimistic, growing evidence supports the hypothesis that high rates of HIV/AIDS can undermine state capacity and social cohesion, particularly when accompanied by poor governance.

The authors assert that HIV-induced declines will reduce South Africa's influence in the region, and thereby exacerbate conflict. However, given that Botswana, Zimbabwe, Zambia, and Swaziland all have relatively higher HIV prevalence rates that South Africa, the latter's power may actually increase relative to its neighbors. Regardless, South Africa's capacity to mount effective peacekeeping operations will certainly decline.

Chapter 4 warns that the United States is increasingly vulnerable to the ravages of emerging infections, resistant strains of disease, and bioterrorism. However, U.S. capacity for dealing with these problems is higher than that of most other nations on the planet, so U.S. vulnerability must be put into proper context. Nations with lower levels of capacity (e.g., Haiti, Rwanda, and Bangladesh) are far more vulnerable to destabilization from epidemic infection. Nonetheless, the authors provide an enlightening discussion of the negative economic and psycho-social impact of bioterror during the 2001 anthrax attacks, and they highlight the inadequacies of the United States' current public health care infrastructure.

In Chapter 5, Brower and Chalk issue another warning: the United States' greatest vulnerability lies at the state level. Individual states are responsible for monitoring and responding to disease outbreaks, coordinating their data and responses through the federal Centers for Disease Control, but states' capacity to diagnose patterns of illness and respond to outbreaks varies widely. Indeed, there is no comprehensive national laboratory system for surveillance.

The book's exhaustive treatment of federal programs and initiatives designed to respond to major health emergencies does turn up some highlights, such as the efforts of the U.S. Department of Defense to develop global pathogen surveillance systems. The U.S. government is developing novel capabilities to respond to bioterrorist attacks or naturally occurring large-scale outbreaks. New legislation, such as the Model Emergency Health Powers Act, gives state officials vastly expanded powers during a major health emergency.

Notwithstanding these efforts, systemic vulnerabilities undermine the United States' ability to respond effectively to mass contagion. Specifically, Brower and Chalk cite inadequate national surveillance mechanisms, fiscal neglect, lack of personnel, diminishing capacity to produce vaccines and therapeutic agents, and a lack of coordination. The authors also discuss persistent problems in communication between the federal, state, and local health bureaucracies that effectively hinder response, as demonstrated during the 2001 anthrax attacks.

Further, the authors note that U.S. health care aid to developing countries across the globe is insufficient. The developing world is the breeding ground for many new pathogens that could be quickly transported to the United States via tourism or trade. Therefore, investing in global public health should be a greater priority for federal legislators and bureaucracies. In the concluding chapter, the authors recommend streamlining domestic pathogen surveillance and response systems, creating an effective public health reserve response system, establishing analytical capacity within U.S. intelligence structures, and integrating disease into national security calculations.

Despite its minor problems, *The Global Threat of New and Reemerging Infectious Disease* provides a constructive analysis of the United States' capability to detect and respond to pathogens during outbreaks. The chapter on South Africa offers a valuable illustration of the impact of infectious disease on social stability in the developing world. The book would have benefited from another case study, perhaps on the deleterious effects of another pathogen (e.g., malaria) on a country's political economy. All told, the book is a solid primer for students, lawmakers, and laymen, and would be useful supplementary reading for undergraduate courses addressing health and security.

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Sparing Nature: The Conflict Between Human Population Growth and Earth's Biodiversity

By Jeffrey McKee
Piscataway: Rutgers University Press, 2003. 210 pages.

Reviewed by **ECKHARD KLEINAU**

Does population growth pose a threat to the survival of the human race, or will man's ingenuity always outsmart nature and our finite resources? Should we heed the warnings that we are exceeding earth's carrying capacity, like those in William Catton's 1980 book *Overshoot: The Ecological Basis for Revolutionary Change*; or instead listen to those, like Donald G. McNeil (2004), who say that Malthus' dire predictions have been discredited by reality? Jeffrey McKee's new book, *Sparing Nature: The Conflict Between Human Population Growth and Earth's Biodiversity*, invites the reader to follow the trail of evidence, from the prehistoric era to the present, that reveals the impact of population on priceless ecosystems. Based on this evidence, McKee finds that population growth must be curbed by "responsible reproduction" or we risk losing nature's ability to support human life.

Is nature "sparing" or must we "spare" nature? Both, argues McKee, outlining his three theses: first, nature's resources are finite, limiting the number of species that will not suffer excess mortality and social disruption. Second, McKee postulates that we must "spare nature" by slowing or halting human population growth. Finally, he stresses that these problems are urgent, because the health of our planet, and therefore our own survival, depends on conserving biological diversity.

Sparing Nature proves its three theses using clues left in the fossil record over hundreds of thousands of years. Like a detective, McKee gathers circumstantial evidence by following man's ecological footprint through the centuries, preparing a convincing case that links the loss of wild plants and animals and the increase in unsafe water and polluted air to the rapidly increasing population.

Eckhard Kleinau has 25 years of experience in medicine, public health, and environmental health, with an extensive background in quality management, operations research, monitoring and evaluation, most recently as the senior technical director of the USAID-funded Environmental Health Project. In addition to degrees in medicine from the Eberhard-Karls University in Tübingen, Germany, he holds master's degrees in epidemiology and health policy and management and a doctoral degree in public health from the Harvard School of Public Health.

According to Charles Darwin, the earth has experienced five episodes of concentrated extinctions since life began 540 million years ago. *Sparing Nature* argues that we are facing a sixth period with a dramatically faster rate of extinction. According to fossil finds, species extinction increased considerably with the advent of *Homo erectus* some 1.8 million years ago. The appearance of *Homo sapiens* similarly accelerated the impact on nature; for example, *Homo sapiens'* arrival in North America about 15,000 years ago was followed closely by the rapid extinction of other continental species.

McKee explores other reasons for species extinction, such as rapid climate change, but no other cause proves to be as convincing as population growth. Biodiversity took a major hit when humans transitioned from foraging to agriculture between 10,000-4,000 years ago. Archeological artifacts indicate that population

Unfortunately, science does not tell us the "right" population size or the "right" level of biodiversity. McKee argues convincingly, however, that we cannot afford to double the world's population within this century.

pressure led to poor agricultural practices that depleted the soil, increased monocultures, and reduced biodiversity. The impact of large and fast-growing populations now extends far beyond local environments. More and more arable land is required to satisfy human needs; for example, worldwide demand for soybeans now threatens the Amazon.

Despite the claims that current growth rates have slowed enough to ease worries, population continues to increase because of the law of exponential growth. Even if growth rates could be slowed to a small fraction, more people would compete for ever scarcer resources. The demographic transition may provide one answer. As societies move from high birth and death rates to low birth and death rates, populations first grow, as the decline in birth rates lags behind the drop in death rates, and then stabilize, as birth rates decline to equal the death rates. But there is no guarantee that the world's population will stabilize on its own. The consequences of being wrong would be disastrous, McKee argues, advocating proactive measures such as better education, especially for girls and women, and greater access to contraceptives.

To make his point, McKee employs an effective cumulative style, hammering the reader with ever-increasing data from a wealth of sources. *Sparing Nature* is easy to read and largely avoids academic language. The book's simple illustrations are helpful, such as a drawing that compares species diversity in a neighborhood and a nature park. McKee's real-life examples demystify some technical subjects; for example, he explains exponential population growth using the number of Elvis Presley impersonators. *National Geographic* or *Nature* subscribers will enjoy this book as much as readers of academic journals.

While *Sparing Nature* provides informative and pleasant reading, a few sections are repetitive, and could have been replaced with more information on the links among population growth, social unrest, and violent conflict. McKee's arguments are well-made, but he does not mention the social problems that might accompany a reduction in population growth, such as insufficient funds to provide social security to an aging society.

Finally, making a case based largely on circumstantial evidence has its drawbacks. While McKee's estimates of the rate of species loss are plausible, they rest on many assumptions and unknowns, such as the number of existing and extinct species. This leaves room for many other scenarios, a flaw that McKee acknowledges. In addition, estimates of a "sustainable" population vary greatly. There is no way to know whether a smaller population may develop less important technological advances, but they are likely to educate more children, improve families' livelihoods, and prevent the starvation, misery, and death of millions.

Unfortunately, science does not tell us the "right" population size or the "right" level of biodiversity. McKee argues convincingly, however, that we cannot afford to double the world's population within this century. Reliable models that link population density and biodiversity, such as the ones cited in *Sparing Nature,* predict a high rate of species loss unless effective measures are taken now. Unlike other species, humans have a choice. We can, and must, adopt responsible reproduction.

The international community should heed these important arguments. While the

Declaration on Environment and Development at Rio de Janeiro in 1992 and 1994's International Conference on Population and Development in Cairo encouraged curbing population growth, the United Nations Millennium Declaration in 2000 did not include demographic trends and family planning in the Millennium Development Goals. Similarly, the 2002 World Summit on Sustainable Development in Johannesburg did not focus on the relationship among population, unsustainable consumption, and environmental degradation.

Sparing Nature is the right book at the right time. It reminds us that there is no safety in numbers. Even if international declarations do not address the issue directly, we must put it on the agenda. The book provides ample reasons for programs to integrate population, health, and environment issues, rather than focusing on one or the other. It strengthens the arguments of those who believe that family planning should be a choice for everybody, and it may provoke conversation with those who feel that the threat of population growth is overblown. The debate will certainly continue, but thanks to Jeffrey McKee, it may be conducted with better information.

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Human Security Now: Protecting and Empowering People

New York: Commission on Human Security, 2003. 159 pages.

Reviewed by **WILLIAM H. MANSFIELD III**

Robert Browning argued, "Ah, but a man's reach should exceed his grasp, / Or what's a heaven for?" ("Andrea del Sarto"). But will humanity embrace a radical vision of security, even as we face new and frightening threats?

Current concepts of security—largely dominated by the traditional state-centered view—are inadequate to meet the needs of our rapidly changing world, according to the independent Commission on Human Security in its creative and succinct report, *Human Security Now: Protecting and Empowering People*. What is required, the commission says, is a broader security framework that focuses not on states but on people. Security should shield people from critical and pervasive threats while empowering them to take charge of their lives. It should create genuine opportunities to live in safety and to earn a livelihood with dignity. To that end, the commission outlines a broad array of recommendations for buttressing and implementing the human security framework.

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Launched at the 2000 UN Millennium Summit, the Commission on Human Security was co-chaired by former UN High Commissioner for Refugees Sadako Ogata and Nobel Prize-winning economist Amartya Sen.

Human Security Now calls for a new "people-centered" human security framework to address the conditions and threats humanity faces at the start of the 21st century. While the intent is admirable, the report's recommendations are general exhortations, rather than specific actions for governments or organizations to perform.

Commissioners included Lakhdar Brahimi, the UN secretary-general's special representative to Afghanistan (and later, Iraq), and former U.S. Secretary of Health and Human Services Donna Shalala.

Dramatic world changes formed the backdrop for the commission's work. In the previous 50 years, the world's population exploded from 2.5 billion to 6.2 billion, mostly in developing countries, and the world's economy grew sevenfold. The turn of the millennium witnessed terrorist attacks, ethnic violence, an economic downturn, virulent epidemics, weakening multilateralism, increasing human rights violations, eroding commitments to poverty, outdated educational systems, and the international community's failure to effectively address many of the root causes of human insecurity at the national and international levels.

Assessing these changes and threats, *Human Security Now* claims that state security, which emphasizes the integrity and robustness of the state, is outdated and no longer meets people's needs. Urgently calling for a new consensus, the commission concludes that achieving human security requires twin efforts: protecting human rights and empowering people. Protection shields people from dangers of all kinds and empowerment enables them to develop their potential and support themselves with dignity.

The commission finds ample opportunities to promote this new concept in the globalizing economy, the rising support for democratic principles, the increasing power of civil society, and the adoption of the Millennium Development Goals. It applies the human security framework to six of today's most difficult problems: violent conflict, migration, post-conflict reconstruction, economic insecurity, health threats, and poor education. For each of these, the commission recommends policies that, through wide-ranging collaborations, consultations, and outreach, could push the concept of human security to the top of the global agenda:

- *Protect people in violent conflict*: promote stronger mechanisms to protect civilians by providing humanitarian assistance and affording special protection to women, children, the elderly, and other vulnerable groups victimized by war and civil strife;
- *Protect people on the move:* aid refugees and internally-displaced persons (the newest and most common victims) by developing a normative framework and practical measures to align state interests with protecting immigrants;
- *Aid people in post-conflict situations*: provide security and public services, help people rebuild, and find new and innovative fundraising strategies for reconstruction (a suggestion that U.S. planners might have found valuable in Iraq);
- *Relieve economic insecurity:* recognize the important role of markets and free trade, but balance economic growth with efforts to address chronic poverty, ensure minimal living standards, and provide social safety nets, land, credit, and housing;
- *Provide health:* commit to universal health care, community-based health initiatives, primary health services, and national disease surveillance systems; and
- *Furnish knowledge, skills, and values for human security*: achieve universal primary education and focus on educating girls, protecting women from sexual violence, equipping people for democratic engagement, and teaching mutual respect.

The commission features environmental sources of insecurity in the "Special issues in human security" section. It cites environmental degradation as a source of food insecurity, and describes how increasing freshwater scarcity escalates tensions among countries, rural and urban populations, upper and lower river basin occupants, and agricultural, industrial, and domestic users. The section calls for protecting the planet's natural resources, effectively implementing sustainable development, and improving the management and use of natural resources. But these important steps do not make the commission's final list of recommended actions.

Human Security Now calls for a new "people-centered" human security framework to address

the conditions and threats humanity faces at the start of the 21st century. While the intent is admirable, the report's recommendations are general exhortations, rather than specific actions for governments or organizations to perform. Nor do they directly address many of the principal roots of today's human insecurity: continuing population growth, massive rural-to-urban migration, degradation of the natural resource base, and the increasing gap between the world's rich and poor.

The commission's proposals to develop appropriate institutions and provide financial resources do not provide much assurance that its recommendations will be carried out successfully. It does not propose that an existing or new international body implement its work. Rather, it recommends establishing a vague core group of involved states, international organizations, and civil society, including the 13-government Human Security Network, the Canadian Consortium of Human Security, and other national, regional, and global alliances. To raise funds, it encourages broadening the donor base of the UN Trust Fund for Human Security and the bilateral Grassroots Human Security Grants, both established by the Japanese government—not a reassuring long-term international funding source for this ambitious program.

Overall, the commission's embrace of the human security concept and effort to re-characterize it are laudable. By seeking to adapt our ideas about security to our rapidly changing and globalizing world, it has delineated a worthy, more encompassing, and certainly more individual (albeit Western) dimension to augment the traditional concept. But whether its vision and recommendations can be successfully implemented—whether its reach exceeds mankind's grasp—is still an open question.

Water Security and Peace: A Synthesis of Studies Prepared Under the PCCP-Water for Peace Process

Compiled by William J. Cosgrove
Paris: United Nations Educational, Scientific, and Cultural Organization (UNESCO), 2003. 108 pages.

Reviewed by **ANNIKA KRAMER**

Annika Kramer is a research fellow with Adelphi Research in Berlin, Germany. She is the co-author of "Managing Water Conflict and Cooperation," in Worldwatch's *State of the World 2005*.

I was thrilled when I received the set of more than 20 publications produced by UNESCO's "From Potential Conflict to Cooperation Potential" (PCCP) project.[1] Finally, everything you need to know about conflict and cooperation in international river basins in one package! The series includes volumes on the history of water cooperation, international water law, systems analysis, alternative dispute resolution, and indicators of water conflict, along with eight case studies of river basins (the Aral Sea, Columbia, Incomati, Jordan, Mekong, Nile, Rhine, and the Upper Lempa) and a training manual on participation, consensus building, and conflict management. Until now, the growing literature on water, conflict, and cooperation has been dispersed among a wide range of journals, discussion papers, and books. A comprehensive overview of the broad range of issues surrounding such an intriguing topic would be an extremely valuable addition to the field. Ultimately, however, the structure of this series

is quite confusing, and instead of being a virtue, the breadth of the series diminishes the value of its contents.

Launched by UNESCO in 2001, the PCCP program—together with the case studies on the Danube, Okavango, La Plata, Volga, and Volta river basins produced by Green Cross International's "Water for Peace" project—examines and promotes the potential of shared water resources to catalyze regional peace and development.[2] The joint program follows a three-track approach:

- A disciplinary track examines historical experiences and reviews legal, negotiation, and system analysis tools for solving water-related conflicts;
- A case study track draws lessons from the roots of transboundary water conflicts and from examples of successful water cooperation; and
- An educational track develops negotiation skills and management techniques for shared water resources.

In *Water Security and Peace*, World Water Council President William J. Cosgrove synthesizes the 28 volumes produced by the project. Summarizing the broad spectrum of PCCP studies is a difficult undertaking, so it may not be the author's fault that the report lacks a common thread. Beginning with an overview of the history of water management, from the first hunter-gatherers to Roman cities to today's industries, *Water Security and Peace* clearly shows that water has always engendered competition, and sometimes conflict. It also demonstrates that human civilization has developed solutions to address water shortages, but the increased speed at which they emerge, due to ever-rising water demands or pollution levels, gives people less time to adapt to new situations.

Drawing on Fekri A. Hassan's contribution to the PCCP series, "Water Management and Early Civilizations: From Cooperation to Conflict," Cosgrove suggests that "only a return to fundamental human values of justice and equity will provide a sustainable solution to the world's accelerating water crisis" (page 11) and that ethics is the "ideal and only long-term solution" (page 19). While this approach would certainly be desirable, generating "a national discourse on water for peace and prosperity" and teaching "our children a system of moral principles…based on shared fundamental human values of justice and equity that will build this world of Water Peace" (page 23) is not a very practical solution.

While the legal principles of international water law are sometimes difficult to apply, they do offer a framework for negotiations. Chapter 4, "Legal Approaches: A Sound Framework," draws on PCCP papers by Vinogradov, Wouters, and Jones (2003) and Shamir (2003) to provide a useful introduction to international water law and alternative dispute resolution mechanisms such as negotiation, mediation, arbitration, and fact-finding. According to the chapter, whether international law and multilateral agreements support sustainable water management and avoid water-related conflicts depends on local and national implementation.

In their persuasive contribution to the series, "Untying the 'Knot of Silence': Making Water Policy and Law Responsive to Local Normative Systems," Pieter van der Zaag and Jennifer Mohamed-Katerere question the efficiency of using the law to change water management in defined ways. Based on their analysis of Zimbabwe's newly reformed water law and other African case studies, the authors point out that "the impact of law—how it is lived and experienced—is determined by its strength vis-à-vis other value and rule systems, including social, cultural, economic, and implementation systems, as well as its relationship to other institutions" (van der Zaag & Mohamed-Katerere, 2003, page 3). Policymakers and legislators, therefore, should take into account the "nexus between law and practice" and thus consider customary law ("the vibrant body of rules and principles that are flexible and constantly growing in response to a changing world") when developing effective water law (pages 2-3).

Water for Peace's seventh chapter, "Obstacles to Cooperation," lists challenges that can

impede sustainable solutions to water management problems, including socio-economic political disturbances; poverty and socio-economic underdevelopment; insufficient information; and inequities in water allocation, knowledge, and military force. The water sector is plagued by weak institutions, which often lack democracy, political will, trained human capacity, and sufficient financial support.

Although some of these obstacles, such as poor governance and changing social values, are widely recognized, Cosgrove argues that developing adequate responses will require further thought and debate. The fifth chapter, "Trends: Emerging Issues and Opportunities for Cooperation," includes Aaron T. Wolf's observations that the shift to less traditional sources of water (e.g., deep fossil aquifers, wastewater reclamation, and interbasin transfers) and the increase in internally-driven conflicts might require developing new responses to transboundary water conflict. Cosgrove considers increased public participation to be one of the most important emerging trends; Chapter 6 collects examples drawn from Green Cross International's experiences to illustrate how NGOs foster cooperation and help reach sustainable solutions to water management problems.

When can obstacles to cooperation lead to conflict? "Indicators of Potential for Cooperation" builds on *International Waters: Indicators for Identifying Basins at Risk* (Wolf, Yoffe, & Giardano, 2003), which finds no evidence that the parameters typically named as indicators of conflict (e.g., water scarcity, high population density, low per capita GDP) actually lead to violence. Instead, Wolf et al. identify a combination of factors that together establish a greater chance of hostility: "The likelihood and intensity of dispute rises as the rate of change within a basin exceeds the institutional capacity to absorb that change" (page 10). They find two situations that significantly increase the risk of a water dispute: (1) the sudden "internationalization" of a basin, or its division between nations, such as followed the dissolution of empires like the Soviet Union, and (2)

"unilateral basin development in the absence of a cooperative transboundary institution," which produces rapid physical change without adequate institutional capacity (page 11). Using these indicators, Wolf and his co-authors identify 17 international basins with the potential to develop disputes in the next 5 to 10 years, basing their assumptions on news reports, water-related treaties, and literature research. While this approach can locate basins in trouble, a more detailed on-site analysis could determine the actual risk of conflict and the most effective way to foster cooperation in a specific basin.

Pal Tamas's volume *Water Resources Scarcity and Conflict: Review of Applicable Indicators and Systems of Reference* (2003) stresses the relationship between intrastate water tensions and interstate conflicts, and emphasizes the importance of developing conflict resolution capabilities and making incremental advances in cooperation. Reviewing existing approaches to predicting conflict, like Clingendael's Conflict and Policy Assessment Framework[3] and the Forum on Early Warning and Early Response (FEWER),[4] Tamas proposes compiling water conflict indicators. His proposal, although not fully described, identifies some

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important components of water-related peace and conflict assessments.

The final three chapters of *Water Security and Peace* provide a rather unorganized collection of lessons learned and recommendations. While they include some important points—for example, implementing transboundary cooperation requires coherent national water policies—the chapters awkwardly jump from one issue to the next, making for a difficult read. They do, however, reiterate the collection's main point: institutions are critical.

But what do effective institutions look alike? The third volume in the PCCP series, *Institutions for International Freshwater Management,* systematically describes 19 institutions managing international river basins, lakes, and aquifers (Burchi & Spreij, 2003). Although it provides a valuable overview of different institutional designs, it does not draw any conclusions about the actual functioning of these institutions, as it is based mainly on treaties, conventions, and agreements, and therefore has very little information on whether the institutions have enough funds, human resources, and technical capacity to be effective.

Recognizing these limitations, Eric Mostert's well-structured desk study *Conflict and Co-operation in the Management of International Freshwater Resources: A Global Review* (2003) examines 23 international freshwater resources and concludes that "well-designed institutions deliver positive effects" and intergovernmental commissions can promote cooperation. His list of 54 lessons includes recommendations for effective institutional design and appropriate negotiation processes. He acknowledges that some of these lessons lack supporting case study evidence and recommends that further research examine the effectiveness of individual institutions.

I hoped that the PCCP case studies would provide this empirical evidence, but unfortunately, each focuses on a different aspect of cooperation, thus preventing cross-basin comparisons. The PCCP series could have contributed greatly to the field if it had used a common organizing principle like Mostert's theoretical framework for the case studies (interestingly, Mostert uses only two of the PCCP case studies—the Rhine and the Aral Sea—to draw his conclusions). Another quibble: although it does include a few familiar basins like the Incomati, the series mostly covers the usual suspects, such as the often-studied Rhine, Jordan, Nile, Danube, Aral Sea, and Mekong basins.

The entire series could have offered more insights into "the intricate and interdependent links between water, security, and peace," as stated in a PCCP brochure (UNESCO & GCI, 2003, page 15), if it were better organized. A more clearly arranged table of contents, for example, would have made it easier to understand the topics covered in each volume. Due to these shortcomings, I believe the PCCP series ultimately fails to fully achieve its noble objective: to provide people from different disciplines with a concise collection of background information, lessons learned, and tools to understand and enhance transboundary water cooperation.

Notes

1. See http://www.unesco.org/water/wwap/pccp/index.shtml for more information.
2. See http://webworld.unesco.org/water/wwap/pccp/cd/case_studies.html to download the PCCP and the Green Cross International case studies.
3. Clingendael is the Netherlands Institute of International Relations; see http://www.clingendael.nl/ for more information.
4. The FEWER network, now defunct, was an independent global network of organizations committed to preventing conflict by providing early warning.

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dotPOP

Online resources for population data

Compiled by **JENNIFER WISNEWSKI KACZOR**

2004 Report on the Global AIDS Epidemic

UNAIDS
http://www.unaids.org/bangkok2004/report.html

UNAIDS lists its most recent estimates of HIV-prevalence rates, country by country. The report also addresses the impact of AIDS globally, nationally, and locally; HIV prevention; the treatment, care, and support of people living with HIV/AIDS; financing the response to AIDS; and national efforts to fight AIDS.

Human Development Report 2004: Cultural Liberty in Today's Diverse World

UN Development Programme (UNDP)
http://hdr.undp.org

UNDP provides statistical tables of country-by-country development indicators. The 2004 edition quantifies cultural exclusion through the "Minorities at Risk" dataset and examines policies affecting cultural diversity and globalization, including traditional knowledge, trade in cultural goods, and migration.

Trends in Total Migrant Stock: The 2003 Revision

UN Department of Economic and Social Affairs (UNDESA) Population Division
http://www.un.org/esa/population/unpop.htm

UNDESA offers new estimates of the number of foreign immigrants living in each country or area of the world as of July 1960, 1970, 1980, 1990, and 2000; the estimates are also broken down by sex.

World Population Policies, 2004

UNDESA Population Division
http://www.un.org/esa/population/publications/wpp2003/Publication_index.htm

This publication illustrates the evolution of national governments' views and policies regarding population size and growth, population age structure, fertility and family planning, health and mortality, spatial distribution, and international migration, from 1976 to 2003.

World Urbanization Prospects: the 2003 Revision

UNDESA Population Division
http://www.un.org/esa/population/publications/wup2003/2003WUP.htm

This revision estimates and projects the urban and rural populations of the world's 5 major areas, 21 regions, and 228 countries, from 1950-2030.

Signposts 2004

Worldwatch Institute
http://www.worldwatch.org/pubs/signposts/

More than 50 years and 238 datasets of environmental, economic, and social indicators are presented in multiple formats, including PowerPoint slides, Excel files, HTML pages, and Worldwatch publications.

The State of World Population 2004

United Nations Population Fund (UNFPA)
http://www.unfpa.org/swp/2004/english/ch1/index.htm

UNFPA's annual report includes socio-economic indicators and demographic data for both developed and developing countries, along with health, education, and reproductive health indicators used to monitor progress on the International Conference on Population and Development goals.

Please visit http://www.wilsoncenter.org/ecsp for more population, environment, and security links.

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