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ENVIRONMENTAL CHANGE AND SECURITY PROGRAM

REPORT

ISSUE 13 2008–2009

New Directions in Demographic Security

Security Implications of Global Population Changes

Youth Bulges and the Chances of Democracy

Population and U.S. Defense Policy

Climate Change, Environmental Degradation, and Armed Conflict

Migration and Civil Conflict in Small Island States

Youth and Conflict in Africa and the Middle East

UN Environment Programme: Building Peace After Conflict

An Ethical Approach to Population and Climate Change

Navigating Peace: Water, Conflict, and Cooperation

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Virunga National Park, 1976 and 2006

The Virunga Park area in Uganda, Rwanda, and the Democratic Republic of the Congo (DRC) is home to over half of the world's 700 surviving mountain gorillas. Surrounding the protected areas, however, are some of the densest human populations in Africa. In addition to population pressure, armed conflict in the region has made habitat and species protection very difficult.

In the 1978 image (left), a line between the protected areas and the populated agricultural areas surrounding the parks is already apparent. While the boundary of the parks has remained largely intact since the mid-1970s, during the 1990s and early 2000s, large numbers of people moved into the area surrounding the parks, many of them refugees from armed conflicts in Rwanda, Uganda, and the DRC. The decline in areas of green outside the protected areas in the 2006 image (right) suggests that few fallow fields and little natural vegetation remain.

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ENVIRONMENTAL CHANGE AND SECURITY PROGRAM

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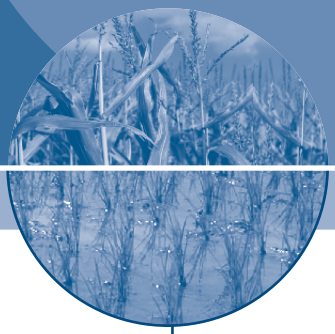

FOREWORD

Environmental Security Heats Up

GEOFFREY D. DABELKO

"We are not your traditional environmentalists," General Gordon Sullivan (USA, Ret.), former U.S. Army chief of staff, wryly told reporters as he presented the Center for Naval Analysis' (CNA) report *National Security and the Threat of Climate Change* in April 2007 (Eskew, 2007). Arguing for more aggressive U.S. action on climate change, Sullivan said the incomplete scientific understanding of global warming was no excuse for delay. Military leaders make battlefield decisions based on partial information all the time—otherwise, more lives would be lost. Penned by Sullivan and 10 other former U.S. generals and admirals, the launch of the CNA report is but one event that marked the return of environmental security to the world stage in 2007 and 2008.

The list is long: The UN Security Council, chaired by the United Kingdom in April 2007, devoted a session to climate change as a security risk. High Representative for the Common Foreign and Security Policy Javier Solana and the European Commission (2008) delivered the report "Climate Change and International Security" to the European Council. The U.S. National Intelligence Council conducted a government-wide assessment of climate change security risks (Fingar, 2008). UN Secretary-General Ban Ki-moon (2007) pointed to climate change, desertification, and the increased conflict between pastoralists and agriculturalists as underlying explanations for the conflict in Darfur.

Since I began working in the environmental security field 19 years ago, climate change has never drawn this much attention from the security community. We are flooded with reports from foreign policy think tanks, military strategists, and scientists around the world on climate. This unprecedented level of interest represents the dawning of a new era for environmental security—especially in the United States, where the field is emerging from the shadows of the Bush administration's distaste for many things environmental.

During environmental security's salad days in the mid-1990s, climate change was often dismissed as a low-priority issue. It was commonly portrayed as a long-term and gradual process that would not play a direct role in triggering conflicts or state failure. Climate change took a back seat to more immediate links between population growth, environmental degradation, and violent conflict, as in headline-dominating crises in Haiti, Liberia, Rwanda, Sierra Leone, and Somalia.

Reflecting its rise in larger scientific, public, and policy debates, climate change is now the headline issue in the environmental security field. Moreover, I would argue that the powerful images of climate's potential security effects—from sea-level rise swamping cities and naval

bases to waves of "environmental migrants" crossing borders—are partly (but certainly not solely) responsible for the new sense of urgency in the world's capitals. It is sad to say, but the thermometer ticking up one or two degrees is not nearly as intuitively scary—or as motivating—as the specter of millions pushed across borders from the effects of climate change.

So we can thank climate change for making environmental security "hot" again. Our challenge now is to utilize this attention wisely and avoid overplaying our hand by fueling false fears. We can view climate change as an existential threat to our security and trace its impacts on local conflicts or community vulnerability. Yet we must avoid a range of pitfalls that could undermine our progress.

Don't oversell the links between climate change and violent conflict or terrorism: While climate change is expected to exacerbate conditions that can contribute to intrastate conflict, it is neither a necessary nor a sufficient cause of conflict. For example, simply labeling the genocide in Darfur a "climate conflict" is both wrong and counterproductive: It ignores political and economic motivations for the fighting—and can be perceived as a way to let the regime in Khartoum off the hook. To fully understand how the conflict between Sudanese pastoralists and agriculturalists reached this extreme, we must not only examine the interplay between environmental issues like desertification, drought, and declining agricultural productivity, but also political relationships, power struggles, and ethnic grievances. Oversimplification could ultimately backfire, lending credence to accusations that environmental security is overly deterministic.

Beware of knock-on effects: Policies designed to confront climate change can have unanticipated effects. Promoted as a mitigation strategy, demand for biofuels has increased the use of agricultural land for "growing energy"—and spurred rising food prices and riots. Deforestation in Indonesia for palm oil plantations has, for example, increased social conflict around forest resources, exacerbating existing tensions between companies and local people (Painter, 2007).

Don't ignore existing, pressing problems: Our research and policy docket is already crowded with serious conflicts (as well as opportunities for cooperation) over resources, whether they are minerals, water, timber, fish, or land. While climate change certainly poses a large—and potentially catastrophic—threat, we must not overlook the ongoing problems of rapid population growth, persistent poverty, lack of clean water and sanitation, and infectious diseases that threaten lives daily. Climate change may multiply these threats, but they will continue to exact a high toll, whether climate change affects them or not.

If we avoid these pitfalls, we can find other approaches that could float all boats as the seas rise. A proactive, multidimensional agenda could, and should, leverage the unprecedented attention to climate change to refocus efforts on the long-term problems of population growth and resource consumption. Such a diverse strategy requires broadening our concept of mitigation and adaptation efforts. Policymakers and practitioners cannot allow the increased focus on climate change to reduce attention to more "routine"—and too-often tolerated—problems.

In addition, the all-encompassing, global threat of climate change provides an opportunity to promote new approaches that recognize the links connecting issues and to create integrated programs that address them. We must overcome our preference for the clear borders and stovepipes of single-sector approaches, which ignore the complex realities of an interdependent world. Embracing—not shying away from—this complexity is our only hope for solving these problems.

Finally, progress requires new partnerships and breaking down traditional barriers

We must overcome our preference for the clear borders and stovepipes of single-sector approaches.

UN peacekeepers help Haitians cross a river after floods near Port-au-Prince September 7, 2008. Officials said at least 61 people had died in floods in impoverished Haiti on top of 500 killed the previous week by Tropical Storm Hanna. (@ REUTERS/ Evens Felix)

between the environment, health, development, and security communities. As General Gordon Sullivan said, "Many of us entered the project as what you might call climate skeptics—but we have come out united around the conclusion that climate change is a serious threat to our national security" (Eskew, 2007). The environmental security field should not miss this opportunity to welcome, guide, and learn from powerful new partners in the fight against climate change and other challenges.

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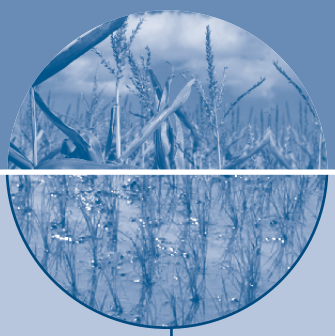
NEW DIRECTIONS IN DEMOGRAPHIC SECURITY



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Flash Points and Tipping Points: Security Implications of Global Population Changes

JACK A. GOLDSTONE

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Is improving relations between Western and Muslim countries crucial to fixing pension programs in Europe and the United States? Can reversing the "brain drain" of medical talent migrating from developing countries to developed ones improve the budget balance of developed nations? Will economic growth in China and India draw investment and innovation away from the United States, Japan, and Europe?

These questions are sparked by predicted trends in global population dynamics over the next half century. In this article, I examine four major trends that are likely to pose significant security challenges to Europe, Japan, and most other developed nations in the next two decades:[1]

(1) Disproportionate population growth in large and Muslim countries;
(2) Shrinking population in the European Union and European former Soviet countries;
(3) Sharply opposing age shifts between aging developed countries and youthful developing countries; and
(4) Increased immigration from developing to developed countries.

The security and conflict problems caused by population growth are not mainly due to shortages of resources. Rather, population *distortions*—in which populations grow too young, or too fast, or too urbanized—make it difficult for prevailing economic and administrative institutions to maintain stable socialization and labor-force absorption (Goldstone, 2002; Cincotta et al., 2003; Leahy et al., 2007).

Big Emerging Markets and the World Economy

Countries are growing today for two major reasons: high population growth rates and demographic momentum.[2] In some countries, mainly in Africa and the Middle East (as well as a few in Latin America and South Asia), birth rates remain much higher than mortality rates, so growth rates are more than 2.0 percent per year. In these countries—which include Afghanistan, the Democratic Republic of the Congo, Guatemala, Iraq, Jordan, Nepal, Saudi Arabia, Pakistan, and Yemen—the population is still doubling every generation, or roughly every 30-35 years (UN Population Division, 2007).

In other countries, such as China, India, and Indonesia, population growth rates have recently dropped substantially; in percentage terms, they are growing more slowly than they have in the past (UN Population Division, 2007).

However, these countries already have such a large cohort of women of childbearing age that their populations continue to add significant numbers each year. In China, for example, although most couples have fewer than two children, zero population growth is still several decades away. While current growth rates have sunk to around 0.6 percent per year, China will add nearly 80 million people during each of the next two decades before its population peaks.

India, though not quite as large as China today, is growing twice as fast, at 1.4 percent per year, and will add roughly 135 million people per decade for the next two decades. Even with a continued decline in their birth rates, these two countries alone are expected to add roughly 400 million people by 2025—more than the entire population of the United States, the United Kingdom, the Netherlands, and Belgium today *combined*.

Most of the 20 largest countries in the world have modest growth rates but large demographic momentum, and thus will make the largest contributions to total world population growth in the next 20 years. The fastest-growing countries are generally smaller, but are facing the largest burden of additional growth on a percentage basis (see Table 1). For the next several decades, global population growth will be concentrated in only a few regions and countries, mainly Muslim societies (almost the entire top half of Table 1) and huge states with populations of 75 million or more. Most of the states that dominate Table 1 are also among the world's lower income countries. By contrast, population growth rates in Europe and Japan are already low and, in some cases, negative.

Therefore, the proportion of the world's population living in Muslim states, or in the very largest and very poorest states, will grow, and the proportion of the world's population living in developed countries will shrink. The sole exception is the United States, which is expected to add 50 million people in the next 20 years—mostly due to recent and projected immigration of people born elsewhere.

Some countries with extremely rapid population growth are likely to manage it reasonably well due to sound management and strong economic growth (e.g., Kuwait and the United Arab Emirates). However, in a number of "flash points," the inability to integrate rapidly expanding populations into politics and the economy will lead to radical political mobilization among those angry at not attaining the level of prosperity reached by some of their neighbors.

Some of the extremely large countries will probably manage their anticipated growth without conflicts. Yet the sheer size of the population increases they face in coming years, combined with their efforts to rapidly industrialize, means that many will also face a "tipping point," when uneven development leaves tens of millions of disadvantaged people to watch other millions reap the benefits of rapid growth. The disparities of economic fortune among classes, regions, or ethnic groups may become so great as to spark violent protests. Or the migration of rural masses to urban and industrial centers could produce a social crisis.

We cannot predict which countries will face such crises, as they are due to failed political leadership and administrative management more than population changes *per se*. But we can say that in many of the largest countries, governments will face exceptional challenges in meeting their populations' demands for both strong and equitable economic growth and sound political management.

We can say with certainty that these trends pose major dilemmas for the economic policy and development of the West, particularly Europe. In 2005, only 5 of the 25 largest countries in the world were in Europe, with a combined population of roughly 400 million, or about one-tenth the total population of the remaining countries (UN Population Division, 2007). By 2025, just two decades distant, there will be only four European countries in the top 25, with a total population of 338 million, or about seven percent of the 5.5 billion inhabitants of the other 21 countries. By 2050, there will be only three European countries in the top 25 with a total population of 258 million, or just four percent of the 6.3 billion in the other

Population distortions—in which populations grow too young, or too fast, or too urbanized—make it difficult for prevailing economic and administrative institutions to maintain stable socialization and labor-force absorption.

The proportion of the world's population living in Muslim states, or in the very largest and very poorest states, will grow, and the proportion of the world's population living in developed countries will shrink.

22 countries. Europe's weight in the top 25 countries is shrinking dramatically.

The expected changes in Europe's global demographic weight are even more striking. In 2005, all of Europe comprised 731 million people, which is projected to shrink to just 664 million by 2050, while the rest of the world grows from 5.8 billion to 8.5 billion (UN Population Division, 2008). That is, in a single generation (the next 42 years), global population outside of Europe will increase by 2.7 billion while Europe's population will *decrease* by about 67 million.

The shrinking demographic weight of European countries puts them on the horns of a dilemma. If the economies of fast-growing developing countries do not catch up to those of the richer countries, then the standard of life enjoyed by the West will seem more elite and unfair than ever, fueling resentment of developing countries against the G-8. On the other hand, if economic growth in those countries does exceed that of the West, so that living standards in poor countries or regions starts to approach those of rich countries or regions, then the combination of shrinking population and lagging economies will render the G-8 countries more and more irrelevant to the world economy. Greater resentment or greater irrelevance: certainly a difficult choice.

Europe's combined GDP in 2007 was US$14 trillion dollars (CIA, 2008). Assuming GDP growth per capita of 2.5 percent per year and no net population growth, Europe's economy would increase by US$9 trillion (excluding inflation) by 2025. For Asia (excluding Japan), 2007 GDP was slightly larger, at US$18 trillion dollars (CIA, 2008). But due to modest growth in GDP per capita plus large population increases in most countries, total GDP is growing far more rapidly in this region. Iran and Pakistan achieved recent growth rates of 4 and 6 percent per year, respectively, while India and China were growing by 8-10 percent per year—and despite the global economic downturn, both countries are expected to continue growing by 6-7 percent in 2009 (CIA, 2008; EIU, 2008). If Asia (excluding Japan) can sustain an overall growth rate of total GDP of 5 percent per year over the next 20 years, the increase in Asia's GDP would be US$30 trillion¸ or more than three times the total economic growth of Europe.

If Asian GDP does not grow at 5 percent per year, living standards in Asia will not catch up to those in Europe (and Japan). Yet if Asian GDP does grow at that pace, then given the size of Asia, the preponderance of economic growth on the Eurasian continent will be occurring outside of Europe. Greater degrees of investment and innovation are likely to move to areas outside of Europe, further weakening its economic strength and leadership. In other words, we are on the cusp of a global tipping point, in which East and South Asia come to eclipse Europe and Japan as major sources of global economic growth—a point made all the more sharper as Europe and Japan slip into recession at the end of 2008.

These demographic and economic changes also indicate that the military capacities of large developing countries will increase, while the ability of rich nations to put "boots on the ground" in conflict zones will diminish. Managing conflicts involving developing countries will become more difficult, and will put more of a strain on developed countries' economies, than before.

As the portion of the global economy contributed by the G-8 countries shrinks, countries such as China, India, Turkey, Brazil, Indonesia, and Mexico will become global economic powers. Admitting major regional powers into international governance bodies is vital if those organizations are to retain legitimacy. The November 2008 Summit on Financial Markets and the World Economy expanded the "G-group" to include these big emerging democratic economies—a trend that must continue if such efforts are truly going to grapple with the global economy.

Naturally, these measures will provoke great opposition and controversy. However, if Europe chooses to isolate itself from the global popula-

tion and the global economy, it will continue to shrink in relation to the world. Moreover, if Europe fails to support economic growth outside of Europe, the rapidly increasing numbers of people in non-European and mainly Muslim countries is simply going to fuel ever-greater resentment of Europe's position, exacerbating the problems of terrorism, smuggling, and illegal trafficking as the ways to "get ahead" and "get even." In short, Europe has no choice but to support and actively engage the fast-growing countries of the world, improve relations with their populations, and support—and seek to share in—their growth.

The Great Slowdown in Population Growth in High-Income Countries

During the next several decades, the population of most European countries, including Russia, Germany, Italy, Ukraine, Spain, Poland, Romania, the Czech Republic, and Hungary, will shrink substantially, due mainly to a sharp decline in the number of children per couple, to well under 2.0 and in some cases under 1.5 (UN Population Division, 2007). This slowdown will be accompanied by a rapid increase in the percentage of the population in higher age brackets, as the number of young children falls further behind the number of aging baby boomers. By 2050, the percentage of Japan's and Europe's population over age 60 is expected to double, to 35 to 40 percent of total population (Jackson & Howe, 2008).

This pattern is highly novel and abnormal. Historically, population growth has stagnated on occasion, or been substantially reduced by major epidemics, but the cause was high mortality, especially among the young. Birth rates remained high, and when conditions were more propitious to growth, population increase resumed. In modern Europe, the United States, Canada, and Japan, decreasing birth rates have precipitated population decline. Women are marrying later, if at all, and having fewer children. The result is an unprecedented aging of populations (less so in the United States), at the very same time that national economies can be expected to decline dramatically as a percentage of global GDP.

Table 1: Fastest Growing Countries, 2000–2005 (with at least 1 million people)

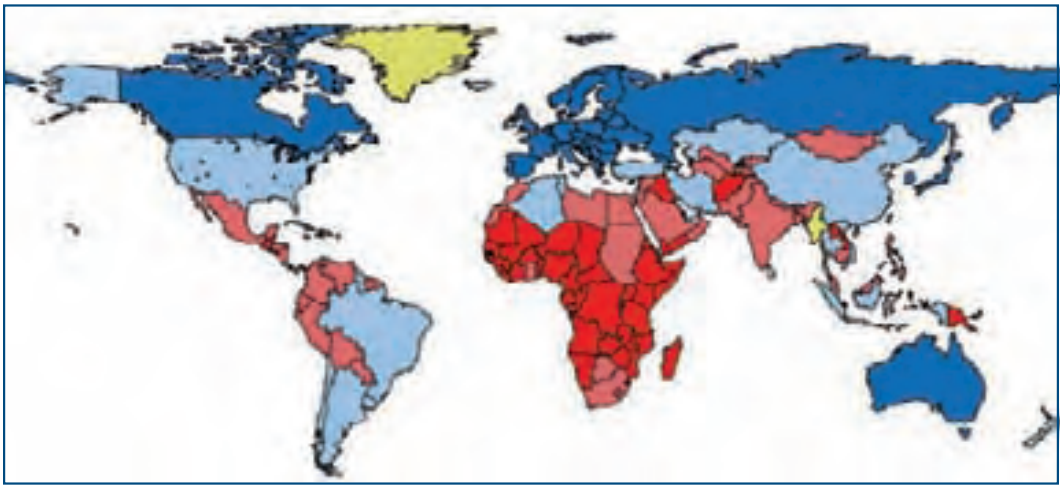
	ANNUAL GROWTH RATE, %
United Arab Emirates	4.7
Sierra Leone	4.2
Eritrea	4.1
Afghanistan, Kuwait	3.8
Chad, Palestine (occupied)	3.6
Niger	3.5
Burundi	3.3
Burkina Faso, Benin, Uganda	3.2
Gambia, Guinea-Bissau	3.1
Congo (Dem. Rep.), ***Mali, Somalia, Yemen***	3.0
Angola, ***Jordan, Mauritania,*** Togo	2.9
Iraq, Madagascar	2.8
Syria	2.7
Ethiopia, Kenya, Malawi, ***Senegal,*** Tanzania	2.6
Guatemala, ***Nigeria, Saudi Arabia***	2.5

Note: Countries with large Muslim populations in italics.
Source: UN Population Division (2007).

This slowdown in population growth has major implications for overall economic growth (Eberstadt, 2001). The economies of aging nations will not be stimulated by growing numbers of consumers and demand for housing. The capital growth generated by larger generations of young people approaching their peak earning years and saving for retirement will cease as well. Even if the growth of Europe's income per capita remained constant, its overall economic growth rate would be cut in half as the population declines over the next 30-50 years.

An overall growth rate this small allows few margins for accumulation to invest for the future. As Benjamin Friedman (2005) has argued, substantial growth rates allow more groups to share to some degree in growth, and

Figure 1: Age Structures: Percentage of Population Under Age 15 (2005)



Red: 40+ Pink: 30–39 Light Blue: 20–29 Dark Blue: <20

Source: Data from UN Population Division (2007).

provide social resources for a variety of services and investments. Overall growth rates below 2 percent per year, by contrast, allow for little redistribution or investment, and tend to heighten social conflicts over such issues as pensions, migration, and labor/employer relations—situations we might see as the global economic downturn progresses.

At the same time, the populations of much of the developing world will be tilted in the opposite direction, to a larger percentage of youth (Fig. 1). The youngest countries—all in the developing world—will have populations with only about 5 percent above age 60, but with nearly 50 percent under age 14 (UN Population Division, 2007). While Europe and Japan will approach the mid-21st century with populations that are tilted toward the old, much of the developing world will have populations that are tilted toward the young (see map).

The obvious result of this imbalance is already taking place: a massive migration of young and working-age populations from the developing world to the developed world. Between 2000 and 2005, 2.6 million migrants moved each year to more developed countries from less developed regions (UN Population Division, 2006). Seeking new livelihood opportunities and entry-level jobs, young people are irresistibly drawn from high-youth-density regions to those with a lower percentage of youth; the OECD countries currently host 10 million foreign-born immigrants ages 15-24 and 55 million between ages 25-64 (OECD, 2008).

Yet this immigration—increasingly contentious in the developed world—is not the only consequence of this imbalance. To sustain their elderly populations, Europe, Japan, and North America will have to spend more money on health care and pension support. Whether active or ailing, the elderly population will need intensive medical procedures and medications necessary to sustain an active and healthy life into older ages—at a time when the domestic supply of new doctors and nurses will likely decline.

Keeping the elderly population at work is not a solution; older workers will generally not welcome entry-level work at entry-level wages, nor physically demanding work. Those gaps in the labor force will have to be filled by younger workers. Moreover, while older workers excel in experience and judgment, they do less thinking "outside the box." Path-breaking innovations in science and technology overwhelmingly come from those under age 45; countries with fewer

Muslim women and children eating cotton candy in Amsterdam (Courtesy flickr user CharlesFred; http://www.flickr.com/photos/charlesfred/278131564/in/pool-euro-muslim)

and fewer younger workers will likely lose an edge in innovation as well.

Developed nations can try to head off this impending growth slowdown in four ways. First, they can improve productivity by investing in technology, education, and innovation. An increase in productivity producing a 1 percent greater gain in output per capita per year would more than offset the change in population. Europe, in particular, should make it easier for individuals to start companies and use capital and labor flexibly to encourage entrepreneurial enterprises—which are the most important source of productivity-increasing growth (Goldstone, 2006). Universities should seek increased support for training and research in the most technically important fields of biology, materials science, and engineering, and offer incentives to steer more students to the technical and engineering fields.

Human capital must not be allowed to sit unused. In 2006, in the United States and Canada, roughly 63 percent of the population over age 16 were employed; in the EU-15, only 52 percent of people over age 16 were employed. Although some European countries had workforce participation rates of 60 percent or more, France, Germany and Spain were at only 51-52 percent, and Italy at 46 percent (U.S. Department of Labor, 2008). Increasing Europe's overall employment participation rates to North American or upper European levels would by itself offset the decline in its working-age population for nearly a decade.

Secondly, countries could increase immigration and seek to raise immigrants' productivity and earnings to the average level as quickly as possible. While integrating and educating immigrants can take a generation or more, the United States, Australia, and Canada have enjoyed the benefits of making it easy for immigrants (especially skilled ones) to start businesses, acquire education, and move into the mainstream, such that the incomes of many immigrant groups exceeds the national norm. Even lower-skilled migrants can raise the overall productivity of a society, if they work for lower wages than had previously been paid to non-migrants for similar work.

Unfortunately, both in Europe and recently in the United States, debates on immigration have exposed the fear that immigration steals wealth from the native population. This pernicious view echoes the similarly mistaken idea that protecting trade by imposing high tariffs or blocking foreign investment will preserve the prosperity of a country. Migrants tend to

The most logical way to overcome the population distortions in varied regions will therefore be to ease the barriers to movement across borders to take advantage of the overall balance.

self-select for entrepreneurial talent, ambition, and energy, and therefore produce net gains for national economies that accept them (Simon, 1999). A European country (or Japan) that has lost much of its own demographic momentum and energy can ill afford to exclude new generations, even if they come from abroad.

A third way to head off this impending growth slowdown would be to pursue pro-natal policies that encourage larger families among the existing populations. However, it is not clear which policies would do this; demographers do not fully agree on the reasons underlying a baby boom. Unless societies start placing a higher worth on larger families than on expanding the consumption of consumer goods, small families will continue to be preferred. In richer countries, higher fertility is mainly found among more religious families, which is one of the factors accounting for much higher population growth in the United States than in Europe (Longman, 2006). Short of a religious revival in Europe, a major increase in fertility and family size seems the least likely solution to the continent's demographic and economic decline.

Fourth, and perhaps least discussed, encouraging a "reverse flow" of older migrants from developed to developing countries could create great benefits for both. If older migrants take their retirement along the southern coast of the Mediterranean, or in Latin America or Africa, it can greatly reduce the costs of their retirement. Of course, developing countries will need quality residential and medical facilities to make them desirable destinations. This effort could also counteract the constant drain of medical and nursing talent to rich developed countries. "Medical tourism" to many developing countries has already begun as residents of developed countries seek lower prices for medical procedures. Investing in facilities that will make long-term retirement attractive in cheaper locales will reduce the pension and medical cost burden for developed countries while channeling jobs and investment to developing countries with ample labor.

While Europe, the United States, and Japan will have older populations, and many nearby developing countries will have young populations, the global population as a whole will be nonetheless be heading for a relatively healthy age distribution of population. The most logical way to overcome the population distortions in varied regions will therefore be to ease the barriers to movement across borders to take advantage of the overall balance.

No doubt, a combination of all four methods will be required to offset the slowdown in population growth in high-income countries. Yet we should recognize that one of the biggest obstacles is the growing antagonism between the West and much of the Muslim world. The way forward for the West lies in greater openness and integration, increased investment in growth abroad, better integration of immigrant communities, and reduced barriers to emigration from fast-growing but youthful societies. None of this is possible with the high levels of fear, mistrust, and antagonism between the West and populations of many of the largest and fastest growing countries of the world. We must reach the degree of cooperation necessary to respond to the global population changes already in place for the next half-century. Much more than terrorism, these trends will affect the long-term prosperity of the developed, but stagnating and rapidly aging, populations of the West, and the fast-growing and extremely youthful population of the developing and largely Muslim nations.

Notes

1. This article is based on a paper of the same title forthcoming in the *Mackinder Journal* and presented to the Mackinder Forum, Minster Lovell, United Kingdom, March 14-15, 2006. It was also presented to the Conference on Population Changes and Global Security, sponsored by the Federal Academy for Security Studies and Atlantik-Brücke, Berlin, Germany, November 13, 2006.

2. Migration is not a major factor in those countries experiencing substantial population growth, with the exception of the United States, where migration and the high birth rates of immigrants have produced exceptional population growth for a highly industrialized nation. In some other highly industrialized coun-

REPORT ONLINE

Jack Goldstone and Eric Kaufman discussed "Flash Points and Tipping Points" in a Wilson Center webcast in February 2007: http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=218994

The Global Report on Conflict, Governance, and State Fragility 2007: Gauging System Performance and Fragility in the Globalization Era, by Monty Marshall and Jack Goldstone, plots the profound split between "Haves" (about 15 percent of the global population) and "Have-nots," while the report's State Fragility Index and Matrix ranks countries according to their degree of stability: http://www.fpbmonitor.com/action/reader?head=scorecard&jid=FPB

Jack Goldstone and Monty Marshall presented the *The Global Report on Conflict, Governance, and State Fragility* in a Woodrow Wilson Center webcast in March 2007: http://www.wilsoncenter.org/index.cfm?fuseaction=events.event_summary&event_id=225091

tries—the United Kingdom, France, the Netherlands, and the Scandinavian countries—migration is offsetting decline or stagnation in the native-born population, but it is not sufficient to substantially increase the population. For example, the projected growth rate in the United Kingdom to 2025, including migration, is only 0.32 percent per annum.

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Half a Chance: Youth Bulges and Transitions to Liberal Democracy

RICHARD P. CINCOTTA

Is it over? Has democracy's "third wave"—the virtually uninterrupted uptick in the number of democracies since the early 1970s described by Samuel Huntington (1991)—finally spent all of its momentum? Some analysts contend that it has, and that a reverse wave of neo-authoritarianism is already on the rise (Diamond, 1996; Carothers, 2002). In this article, I argue that the recent leveling-off in measures of global democracy is temporary, and that as youthful demographic profiles mature, new and more stable liberal democracies are likely to arise before 2020 in Latin America, North Africa, and Asia.

Why such optimism? Because my analysis of recent demographic and political trends shows that countries with a large proportion of young adults in the working-age population (referred to as a "youth bulge") are much less likely to attain a stable liberal democracy than countries with a more mature age structure. If fertility continues to decline and age structure continues to mature in many of the world's current youth-bulge countries, analysts should expect most of these states to ultimately attain and maintain liberal democracy. Of course, there will be exceptions; since the early 1970s, charismatic authoritarian leaders and single-party ideological elites have demonstrated a capacity to resist democratization, persisting even as their countries' age structures matured.

In my analysis, I compared two measures: (1) the youth-bulge proportion—defined as the proportion of young adults (ages 15 to 29) in the working-age population (ages 15 to 64)—which is derived from estimates and projections published by the UN Population Division (2007); and (2) liberal democracy, which is identified by a rating of "Free" in Freedom House's (2008) annual evaluations of political rights and civil liberties (from 1972 to 2007).[1]

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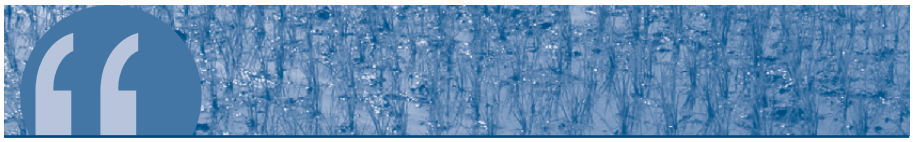
The Youth Bulge: Constraining Liberal Democracy?

Clues to the relationship between the youth bulge and liberal democracy can be seen in the wake of demographic changes that swept through much of East Asia and Latin America in the late 1980s and 1990s. In response to declines in women's fertility, the proportion of young working-age adults in about a dozen countries dropped steeply, to between 0.36 and 0.42. When it did, liberal democracies evolved in most of these countries, with little of the military preemption and backsliding that previously typified their regions—with the recent notable exception of Thailand (see Fig. 1).

In contrast, where liberal democracy emerged before a large youth bulge declined—as in Colombia, Ecuador, Fiji, India, Malaysia, Papua New Guinea, Peru, Sri Lanka, Turkey, Venezuela, and numerous others—regimes failed to stabilize, retreating to less democratic practices and institutions of governance. In some cases, deliberalization occurred periodically, as in Turkey and India. In others, such as Malaysia and Fiji, the preemption has lasted for decades.



Countries with a large proportion of young adults in the working-age population (referred to as a "youth bulge") are much less likely to attain a stable liberal democracy than countries with a more mature age structure.

The Youth Bulge and the Hobbesian Bargain

Why should a youthful age structure influence political regimes? Numerous studies have concluded that countries with a large youth-bulge proportion experience a high risk of political violence and civil strife (Leahy et al., 2007; Urdal, 2006; Mesquida & Wiener, 1996). Assuming, as Thomas Hobbes did in the middle of the 17th century, that citizens are willing to relinquish liberties when faced with threats to their security and property, it is not surprising that support for authoritarian regimes should rise—especially among the commercial elite—during a large youth bulge, when much of the population is young and jobless. Youth bulges tend to give rise to youth cultures that coalesce around distinctive identities and untempered ideologies, and find expression through experimentation and risk-taking. Such conditions, some theorists argue, facilitate the political mobilization and recruitment of young adults—particularly young men—by non-state and state-supported organizations capable of political or criminal violence (see Goldstone, 1991; Moller, 1967/68).

The influence of a youthful age structure on regime type can be understood as a two-stage process.[2] Countries with a large proportion of young adults find themselves in the first stage: They are saddled with a social environment where the regime's legitimacy is strained and the political mobilization of young men is relatively easy. The resulting politics tend to be fractious and potentially violent. In this stage, regimes typically concentrate resources on preserving their position by limiting dissent and maintaining order, a focus that engenders the support of commercial elites and other propertied segments of society.

States can make democratic gains during this stage, and are sometimes pressured into political reforms by youth-led democracy movements. Yet countries with large youth bulges do not usually attain a high level of civil liberties and political rights. When they do—when enlightened authoritarians impose a "democratic legacy" under youth-bulge conditions, or when democratic institutions are imposed at independence or as part of a treaty—these gains face unfavorable odds. Countries that sustained a liberal democracy over periods of youth-bulge conditions (such as Costa Rica, India, Jamaica, and South Africa) have shown extraordinary dedication to maintaining democratic institutions under the stresses of ethnic violence, intense criminal activity, or external threat.

In the second stage, the dissipation of a large youth bulge tends to yield relative political calm and a "demographic dividend": a decline in the number of children each working adult has to support and a bulge in the middle-aged section of the working-age population, which relieves pressure on child health and educational ser-

A woman in Liberia holds up her inked finger indicating she voted in the first democratic elections in Liberia following 14 years of civil war. According to the "half a chance" benchmark, Liberia's democracy is one of the most fragile. (© 2005 Omar Eid, courtesy of Photoshare)

vices, stimulates savings, contributes to productivity, and facilitates increased human capital investment and, ultimately, wage growth (see Bloom et al., 2002; Lee & Mason, 2006).

With much of society's political volatility depleted, authoritarian executives tend to lose the support of the commercial elite, who find the regime's grip on communication and commerce economically stifling and the privileges granted to family members and cronies of the political elite financially debilitating. As both Huntington (1991) and Schmitter (1980) have noted, political calm and improved economic and social conditions—which usually advance hand-in-hand with the maturing of age structures—provide authoritarians with opportunities to make a deal for a safe exit.

The Probability of Liberal Democracy: A Schedule

By dividing the world into five regions and analyzing data every five years beginning in 1975, I found (with surprising consistency) that as the regional average of the proportion of young adults declined, the number of liberal democracies grew.[3] Averaging all countries, I found that a youthfully structured country has a 50 percent chance of being rated a liberal democracy once its young-adult proportion drops to about 0.40.[4]

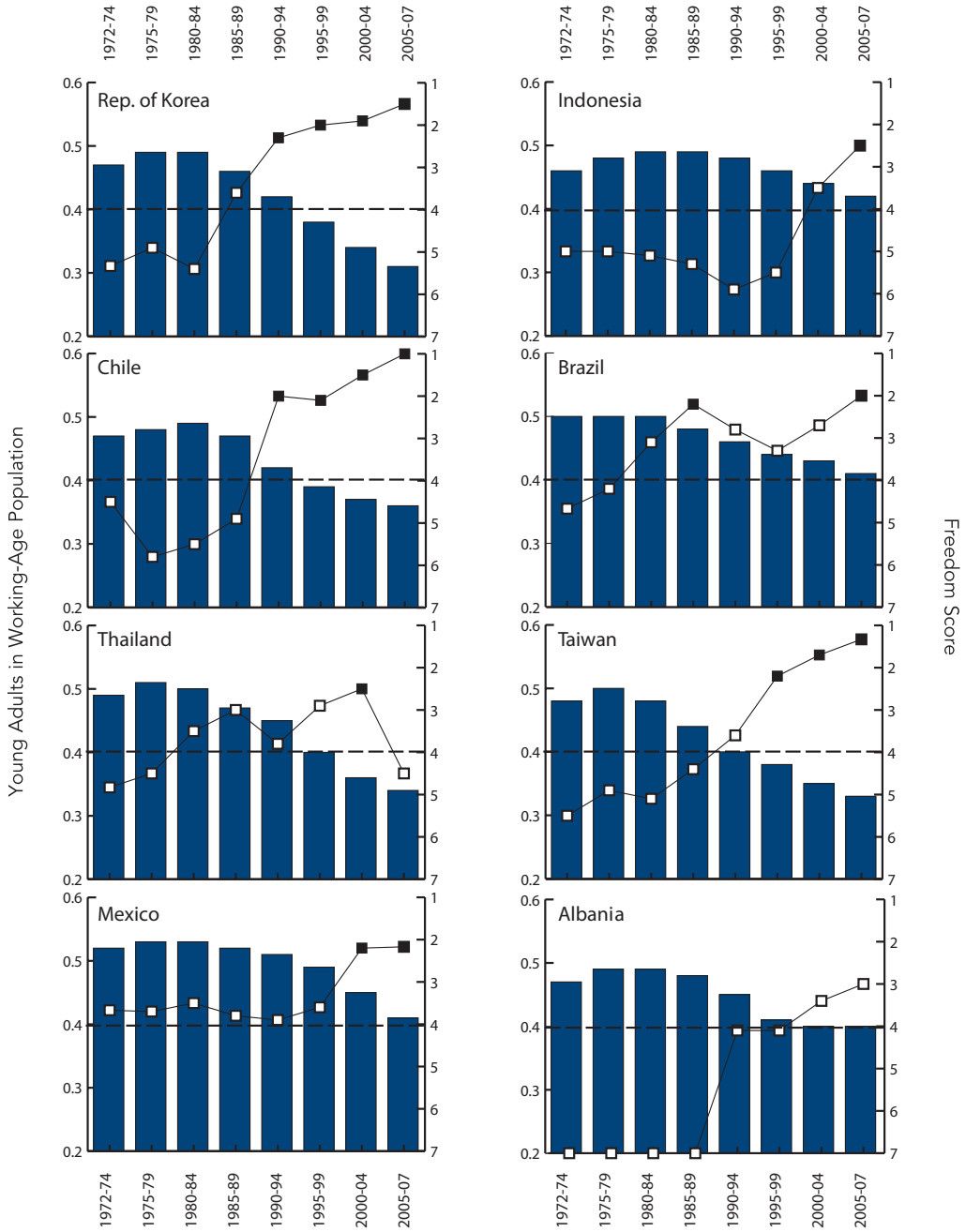
This "half-a-chance benchmark" has, in the recent past, provided a fair indication—plus or minus a decade—of when a country will become a stable liberal democracy. Equipped with this basic statistic, as well as population estimates and projections, I arranged a timetable identifying each country's current probability of liberal democracy and the year in which each youth-bulge country passed, or is projected to pass, the half-a-chance benchmark. The map (Fig. 2) highlights five categories of interest to analysts:

- Fragile liberal democracies (probability of liberal democracy is 40 to 60 percent);
- The most fragile liberal democracies (probability less than 40 percent);
- Other regime types projected to have more than 50 percent probability of attaining stable liberal democracy before 2030;
- Other regime types with a less than 50 percent probability of attaining stable liberal democracy before 2030; and
- Other regimes that are demographically long overdue for liberal democracy (probability is greater than 70 percent)—this category includes, and helps define, neo-authoritarian regimes.

Outliers: Resistant Authoritarians and Persistent Liberal Democracies

How well does this timetable work? It performed most accurately when forecasting liberal democracy among states ruled by military "caretaker" regimes, weak personal dictatorships, or partial democracies. However, a close inspection of this method's failures suggests that the demographic changes (and associated social and economic changes) it tracks are too weak to undermine regimes dominated by a strong and charismatic authoritarian, such as Russia's Vladimir Putin,

Figure 1: Freedom Scores and the Proportion of Young Adults in the Working-Age Population



Young adults: average proportion of young adults (15 to 29 yrs) in the working-age population (15 to 64 yrs).

Half-a-chance benchmark: proportion of young adults associated with a 50-percent probability of liberal democracy.

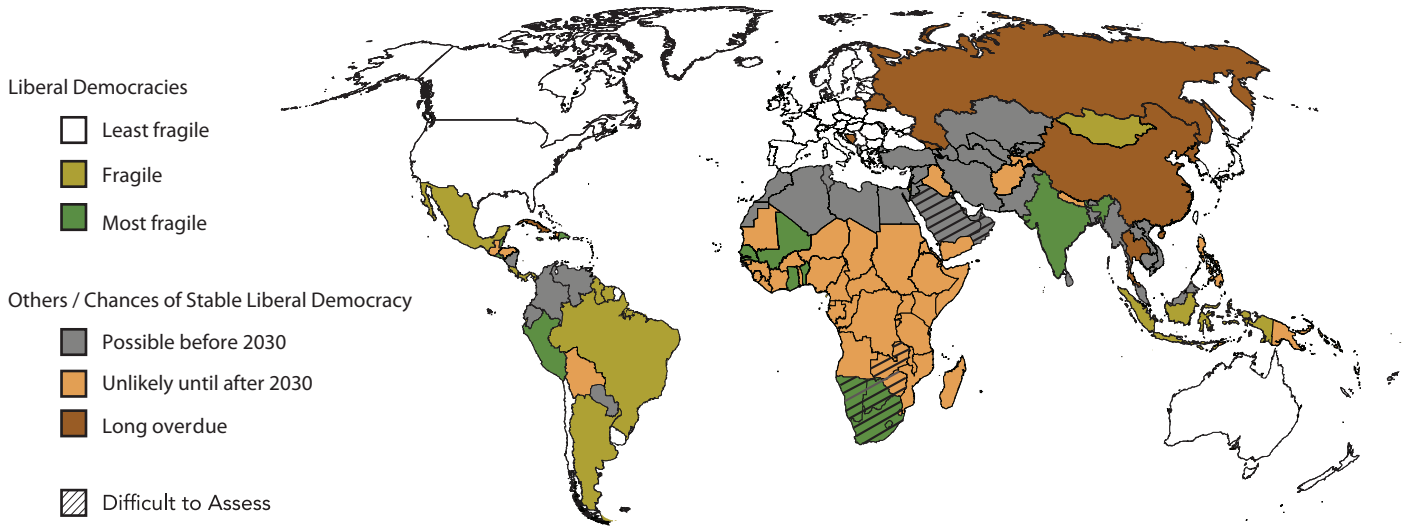
Freedom score: averaged political rights and civil liberty scores.

■ Free (1.0 to 2.5) [assumed as liberal democracy]

□ less than Free (>2.5 to 7.0)

Data sources: Freedom House (2008); UN Population Division (2007); Republic of China (2008).

Figure 2: Demographically Derived Categories (2008)



Source: Data from Freedom House (2008); UN Population Division (2007). Map produced by Esther Akitobi, research assistant at Population Action International.
Note: The age structures in countries marked "difficult to assess" are heavily impacted by HIV/AIDS or immigration.

The dissipation of a large youth bulge tends to yield relative political calm and a "demographic dividend."

Cuba's Fidel Castro, or Singapore's Lee Kwan Yew; or by a unified ideological elite deemed synonymous with the state, such as the Chinese Communist Party. Interestingly, these regimes' institutions and policies may have evolved, and may continue to evolve, to withstand and counter the liberalizing side-effects of demographic and socio-economic changes.

The method also identifies states that became liberal democracies far ahead of schedule. Latin American countries have tended, as a group, to embrace liberal democracy while hosting a large youth bulge, which may partly explain why 60 percent of these states have flip-flopped between a liberal democracy and a less democratic regime at least once since the early 1970s, far more than any other region.

A Test: Eastern Europe and Former Soviet States

The youth-bulge method can be tested by predicting regime patterns among the Eastern Bloc states: the former-communist states of Eastern Europe and their ex-Soviet neighbors. While these 28 states are quite different, their collective experience as single-party autocracies provides some common starting points.[5] To prove useful, the method I have outlined should predict, with reasonable accuracy, the proportion and distribution of liberal democracies among these states, with some allowance for delays and complications due to the persistence of Soviet-era political institutions and instabilities.

Does the youth-bulge method pass this test? Yes; by 2007, the average young-adult proportion among the Eastern Bloc countries had declined to 0.36. Meanwhile, the region's proportion of liberal democracies plodded upward to 46 percent since the early 1990s—close, but still short (by three liberal democracies) of the 57 percent that was predicted. Better yet, the distribution of regimes that emerged is consistent with the method's expectations: Liberal democracies dominate the category with the lowest young-adult proportions (Fig. 3).

Is this evidence sufficient to claim that a youthful age structure is the sole constraint to greater political liberalization in the lagging Eastern Bloc states? No, not at all; the countries that, so far, have not attained liberal democracy show geographic affinities and similarities in their per capita income and urbanization—factors that are also associated, to some

Hindu pilgrims protest against the local government. According to the "half a chance" benchmark, India's democracy is one of the most fragile. (© 2007 Arup Haldar, courtesy of Photoshare)

degree, with the pace of demographic transition. Because income measures are difficult to predict, they do not provide a simple means to project a timetable for liberal democracy.

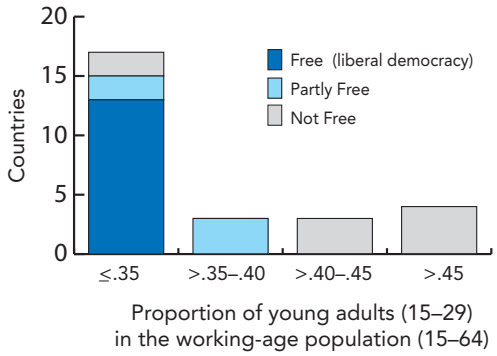
Forecasting Liberal Democracy

If this relationship continues to hold, demographic projections could help analysts identify regions, and states within regions, that in the near and medium term are likely to experience population age structures that are conducive to liberal democracy—and those where liberal democracy is at risk. Nearly all of the countries in two geographical sub-regions are projected to pass the half-a-chance benchmark by 2020: those along the northern rim of Africa (Morocco, Algeria, Tunisia, Libya, and Egypt) and along the northwestern rim of South America (Colombia, Venezuela, and Ecuador). None of these North African states has previously attained liberal democracy, while Colombia, Venezuela, and Ecuador reached these heights early, and then retreated. Analysts should expect one or more liberal democracies arising in each of these sub-regions by 2020 or before. Other countries, which are not currently liberal democracies, that are projected to pass the half-a-chance benchmark before 2020 include Albania, Armenia, Azerbaijan, Iran, Kazakhstan, Kyrgyzstan, Lebanon, Malaysia, Myanmar, Turkey, Turkmenistan, and Vietnam.

Admittedly, several of these states face daunting impediments to completing their democratic reforms. For Colombia, Algeria, and Lebanon, further liberalization is unlikely while non-state actors threaten lives and property, control territory, and operate state-like institutions and militias. Yet the age-structural clock is ticking; as fertility declines and populations mature, recruitment will likely become more difficult and more expensive, helping diminish the already-dwindling field strength of insurgencies, whittling them to a small criminalized core, or pressuring them to focus their resources on electoral politics (as in the evolution of Northern Ireland's "Troubles").

In several states, regimes will be able to stall or resist. For example, Vietnam's communist party and Iran's clerical non-elected leadership

Figure 3: Freedom Ratings of 28 Former Communist Eastern European and Asian States



Data sources: Freedom House (2008); UN Population Division (2007).

bear similarities to other state elites that have withstood the tide of age-structural change. On the other hand, Venezuela's President Hugo Chávez, having lost a constitutional referendum in November 2007 that would have augmented his constituency by lowering the voting age to 16, is left with only non-electoral means to dismantle checks on his own authority—a heavy-handed tactic that, when previously applied by Chávez, has alienated influential supporters.

Beyond Prediction: Southern Africa, the Gulf States, and the Future of Europe

Two clusters of countries with extraordinary age structures were omitted from this analysis: (1) the seven most seriously AIDS-affected countries (Botswana, Lesotho, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe), where premature adult mortality buoys a high proportion of young adults; and (2) the six oil-rich Gulf States (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates), where large populations of foreign workers mask more youthful indigenous populations. This demographic method provides little insight about governance in either of these clusters.

For example, highly elevated death rates among people 20 to 55 years old and the persistence of very youthful age structures in the most seriously AIDS-affected states—while the source of great suffering among individuals, families, and communities—has not led to the state failures that analysts once feared, but instead to a confusing mélange of outcomes. Four states are rated liberal democracies (Botswana, Lesotho, Namibia, and South Africa), while two others are among the most autocratic (Swaziland and Zimbabwe). In the oil-rich Gulf States, the composite age structure—the sum of a foreign-worker population overlaid on a much younger, socioeconomically and ethnically separate age structure of citizens—produces misleading indications of age-structural maturity, and therefore overlooks both the political volatility of Arab youth culture in the Gulf States and grievances arising among foreign workers (Henderson, 2006).

As age structures have matured, the speed of ethnic shifts has quickened. The list of these relative shifts is long, including: increased proportions of indigenous populations in Latin American states; growing numbers of Arabs and ultra-Orthodox Jews in Israel; and larger populations of Muslims in Western Europe. How will democracies respond to the emergence of ethnic groups who previously have been political outsiders? Will the liberal democracies of European welfare states retain their suite of liberties and generous social programs as they undergo dramatic ethnic shifts? On these weighty topics the youth-bulge method is unresponsive.

Summary

By focusing exclusively on the institutional reforms and changes in political leadership that precede political liberalization, analysts have overlooked the influence of population age

structure on the timing and stability of liberal democracy. My analysis provides evidence suggesting that a youthful age structure—indicated by a large proportion of young adults in the working-age population—can constrain liberal democracy and destabilize it. This research also shows that the calculation of a country's youth-bulge proportion can be used to assess a liberal democracy's fragility, identify uncommonly persistent authoritarian regimes, and generate reasonable and testable expectations for the advent and stability of liberal democracy.

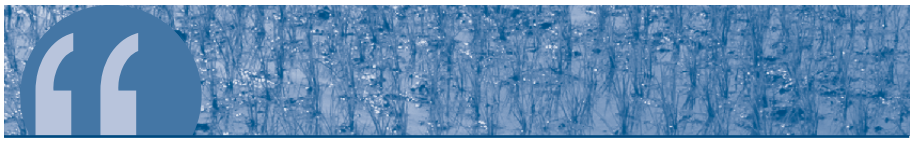
Notes

1. This analysis includes countries with a minimum 2020 population of 500,000 people and uses Freedom House composite scores, which are the average of political rights, "PR" (scaled 1 to 7, with 1 being the maximum realization of political rights), and civil liberties, "CL" (similarly scaled 1 to 7). The category "Free" is assigned to assessments where the average of PR and CL scores ranges from 1.0 to 2.5.

2. The theoretical breakdown of this process was first presented by Jack Goldstone at a seminar on democratization processes sponsored by the National Intelligence Council, March 2008.

3. The five regions are: North and South America, Europe (including Russia), Middle East-North Africa, sub-Saharan Africa, and other Asia-Oceania. This analysis omits two sets of countries with irregular (non-transitional) age structures: the seven countries with high rates of HIV/AIDS and the six Gulf States with a large immigrant population.

4. This analysis employs weighted least-squares regression to determine regression coefficients and intercepts for linear models generating the proportion of liberal democracies expected in a region (Y) from the average proportion of young adults (X) among countries in that region (not the regional young-adult proportion). Seven regressions were generated, one for each five years, from 1975 to 2005. None of the regression parameters from these were statistically different. The regression equation for these composite data are: LD = -0.033(YA*100)+1.83, where LD is the expected proportion of liberal democracies in a regional grouping of countries and YA is the proportion of young adults, age 15 to 29, in the working-age population, 15 to 64. This analysis also has been performed using Polity IV data, assuming liberal democracy as polity scores from +8 to +10, with very similar results.



Latin American countries have tended, as a group, to embrace liberal democracy while hosting a large youth bulge, which may partly explain why 60 percent of these states have flip-flopped between a liberal democracy and a less democratic regime at least once since the early 1970s, far more than any other region.

5. The former Eastern Bloc states are Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Serbia, Slovak Republic, Slovenia, Romania, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

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Two graphics accompanying Richard Cincotta's *Foreign Policy* magazine article, "How Democracies Grow Up," are available online:

A map of "The Young World" indicates the year when each country is projected to pass the "half-a-chance" benchmark based on the proportion of young adults in the working-age population: www.foreignpolicy.com/story/cms.php?story_id=4199

"Where Youth and Freedom Collide" illustrates the likelihood of liberal democracy at various youth-bulge proportions: www.foreignpolicy.com/story/cms.php?story_id=4174

Freedom House rates countries as "free," "partly free," or "not free" based on assessments of their political rights and civil liberties: www.freedomhouse.org/uploads/FIWAllScores.xls

Map of Freedom in the World, 2008 edition: www.freedomhouse.org/template.cfm?page=363&year=2008

Along with fellow *Report 13* author Jack Goldstone, Cincotta assessed the evidence for "the security demographic" at the Wilson Center in June 2006: http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=205876

Two previous *ECSP Report* articles by Cincotta analyze different aspects of the links between age structure and conflict:

"Population Age Structure and Its Relation to Civil Conflict: A Graphic Metric" (coauthored by Elizabeth Leahy): http://www.wilsoncenter.org/topics/pubs/PopAgeStructures&CivilConflict12.pdf

"Demographic Security Comes of Age": http://www.wilsoncenter.org/topics/pubs/ecspr10_C-cincotta.pdf

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Population in Defense Policy Planning

JENNIFER DABBS SCIUBBA

In 1974, the National Security Council expressed concern that population growth in less-developed countries would increase competition for resources, as a result of its assessment of "the likelihood that population growth or imbalances will produce disruptive foreign policies and international instability" (Kissinger, 1974, p. 1). Today's defense community has a broader view of the connections between demography and security, focusing less on competition for resources or on population policies to stem growth and more on a wider range of population issues, such as age structure and migration. But government interest in the influence of population on stability and foreign policy remains high—and, since 9/11, has intensified.

To prepare for terrorist attacks and other irregular, non-state challenges, the Department of Defense (DoD) has begun to seriously examine the roles of demography, ethnic and national identity, and environmental issues in disrupting state stability and instigating conflict. While some in the government have long recognized the importance of these issues, the most recent Quadrennial Defense Review (QDR), released in February 2006, encouraged the systematic analysis and incorporation of these factors into a comprehensive national security framework. For example, the 2006 QDR directed DoD to build partnership capacity, to shift from "conducting activities ourselves to enabling partners to do more for themselves" (Rumsfeld, 2006, p. 2). DoD recognizes that the inability of some states to meet the needs of their growing populations may impede this goal; instead of increasing the ability of partners to aid in achieving U.S. goals, domestic strains are likely to hamper these states' efforts to defend their borders and prevent the spread of terrorist networks. In this article, I outline the military and intelligence communities' interests in population trends in three key regions—the Middle East, Central Asia, and Africa—and describe their use of demography to support military planning and strategy.

Four Trends for Defense

Interest in population trends has recently increased due to the wars in Iraq and Afghanistan, as well as the launch of the new Africa Command (AFRICOM). Four global demographic trends are particularly relevant to U.S. defense planning in these regions: youthful populations, changes in military personnel, international migration, and urbanization.

Youthful Populations

In the Middle East and Africa—the two fastest growing regions in the world—between 30 and

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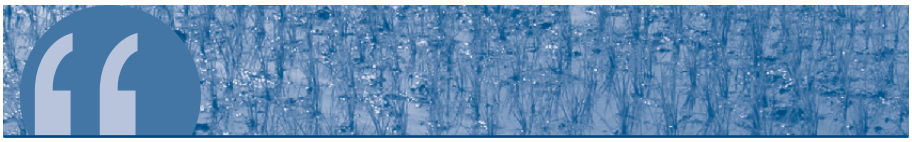


The United States does not have a robust and comprehensive strategy for targeting the connections between youth and conflict. Given that 45 percent of the Afghan population is under age 15, victory—in whatever form—will remain elusive as long as this segment of the population is marginalized.

50 percent of the populations in most countries are under age 15 (PRB, 2007). These huge youth cohorts—commonly known as "youth bulges"—can be desperate or disgruntled if they have few economic or political opportunities. Lack of employment may also prevent them from getting married or participating in other traditional rites of passage. Youth bulges and armed conflict are strongly correlated, especially in underdeveloped countries (see, e.g., Urdal, 2006). Thus, the Middle East and Africa are likely to become more turbulent as the population grows and remains youthful, especially where young people lack job opportunities or other positive outlets. In Africa, the already-dire situation is compounded by the prevalence of deadly infectious diseases—such as HIV/AIDS, malaria, and tuberculosis—that kill the most productive segments of society.

Through Operations Enduring Freedom and Iraqi Freedom, as well as larger efforts to combat global terrorist networks, the U.S. military is highly engaged in these regions. However, the United States does not have a robust and comprehensive strategy for targeting the connections between youth and conflict. Given that 45 percent of the Afghan population is under age 15, victory—in whatever form—will remain elusive as long as this segment of the population is marginalized (PRB, 2007). Ongoing programs to build schools and improve education, such as those carried out by the Combined Joint Task Force-Horn of Africa under U.S. Central Command, are a start, but more concentrated efforts to engage children and youth in positive activities would not only improve their attitudes toward U.S. soldiers, but would also empower them to contribute to rebuilding their societies.

U.S. soldiers helping to construct some schools and distribute educational supplies may improve public relations, but as part of U.S. strategy for the Middle East and Africa, DoD should focus on training and engaging youth in more meaningful ways. Programs that focus on leadership skills and encourage peaceful contact between youth and U.S. military personnel would be a start. The discipline and leadership required of soldiers makes them good role models for youth in developing states, and the more meaningful interactions these youth have with soldiers, the more successful DoD will be in encouraging stability in these volatile regions. The nature of conflict is changing, leading the U.S. military to undertake such new and innovative missions and roles.

Military Personnel

Demographic trends in fertility and mortality rates can directly affect a military's recruiting pool. Diseases like HIV/AIDS, malaria, and tuberculosis are weakening African militaries at the same time that conflict may be increasing due to more youthful populations, strained resources, and a lack of governance. HIV/AIDS has devastated the most productive segments of African society, especially its military-age population (PRB, 2008). Although there is little comprehensive data, UN and government reports show that infection rates in many African militaries are slightly higher than in the general population, as rates are exacerbated by

Spc. Josh Jenkins, a medic of the 82nd Airborne Division, inspects an Afghani child for symptoms of pink eye, on Sept. 30, 2002, Kandahar, Afghanistan. Jenkins is part of the Psychological Operations (PSYOP) teams, humanitarian aid package that goes out on daily patrols to local villages to help build a positive rapport with the local communities and U.S. Forces. (Photo by Spc. Marshall Emerson; courtesy U.S. Army)

the extended time soldiers spend away from home, easier access to money for prostitutes and drugs, and risky behavior characteristic both of the young in general and military culture in particular (Garrett, 2005). The U.S. military is concerned that these diseases could have a devastating effect on African peacekeeping forces, as well as on efforts of Americans and Africans to work together against terrorism.

In many countries in the Middle East, growing youthful populations mean the pool of potential recruits is too big—and the military is one of the few employment outlets for young men in a region where jobs are scarce. In Iraq under Saddam Hussein, young Sunni men joined the military, but now that the Iraqi system has been disrupted, youth are increasingly vulnerable to recruitment by extremists. With few ways to earn a living and support their families, many young Iraqi men are more willing to accept a couple of hundred dollars—or less—to plant a roadside bomb or take up arms for warring factions. Unless economic development accompanies U.S. efforts in Iraq and these young men are able to find legitimate employment, they will continue to be more susceptible to recruitment by anti-U.S. groups.

International Migration

Large-scale movements of people can change the composition of a country's population within days or weeks—much more quickly than fertility and mortality trends. When people move, so do their politics; clashes of identity and interests may lead to conflict or create deep social divisions. In the Middle East and Africa, migration is often conflict-driven. The millions displaced by troubles in Sudan and Iraq, for example, could potentially carry their domestic political skirmishes across borders and further disrupt these regions. Already, environmentally induced migration in South Asia has caused conflict. Since the 1950s, 12-17 million Bangladeshis have moved to India because of floods, drought, land scarcity, and other environmental conditions. This migration led to violence between eastern Indians and Bangladeshis in the 1980s (Reuveny, 2007).

Unmet expectations in overcrowded cities can be the catalyst for civil conflict.

UNHCR (2007) estimates that more than two million Iraqi refugees are elsewhere in the Middle East—more than one million in Syria alone. Governments in the region have been struggling to meet the needs of this displaced population and provide social services, jobs, and housing. Tensions between citizens of the receiving states and the refugees are producing social strife in an unstable region and overly burdening governments that already have trouble providing for their populations. While internal strife could potentially unseat regimes that are unfriendly to the United States, like Iran, there is no guarantee that the new government would be a more peaceful or stable one. The United States is seeking to build the capacity of states in the Middle East to address their internal issues and aid in the war on terror by encouraging stable governments that could stem sectarian violence, but international migration will continue to challenge these efforts in the region.

Urbanization

Two major global urbanization trends could challenge the U.S. military to continue to increase its global role: the growing concentration of people in megacities and coastal areas and the growth of urban slums. By 2020, all but four of the world's megacities—those cities with more than 10 million people—will be in developing states (UN-HABITAT, 2006c). In addition, 75 percent of the world's population already lives in areas that were affected by at least one natural disaster between 1980 and 2000 (UN-HABITAT, 2006a). Megacities and coastal cities in developing countries lack the infrastructure to withstand most disasters and the capacity to deal with the after-effects. The vulnerability of these areas will likely increase demand for stability operations (military efforts to maintain or restore order) and humanitarian assistance. Though these increased requirements may strain U.S. capabilities, conducting stability operations or providing humanitarian assistance could also help build a positive image of the U.S. military abroad, as demonstrated by the relief efforts following the 2004 Southeast Asian tsunami and the 2005 Pakistani earthquake. Soldiers can also increase their own cultural awareness by engaging with locals in areas where they otherwise would not be deployed.

Whereas urbanization in developed states offers benefits to city residents—sanitation, education, jobs, and transportation—slums offer no such services or governance. "Slumization" in sub-Saharan Africa increases ungoverned areas and the potential for internal instability, and thus provides an environment conducive to terrorist recruitment and activity. Rapid urbanization can increase the risk of civil conflict: "During the 1990s, countries with urban population growth rates greater than 4 percent a year were twice as likely to experience civil conflict than those where urban growth was more paced" (UN-HABITAT, 2006b, p. 1).

In most slums and cities in developing states, population growth is outpacing the ability of the state to create jobs for these citizens and to build infrastructure to accommodate concomitant growth in pollution and sewage. Such unmet expectations in overcrowded cities can be the catalyst for civil conflict. Urban instability—as we have seen in Iraq—requires that U.S. forces be prepared for a variety of missions in urban environments, and could increasingly blur the distinctions between police and military functions.

Opportunities to Address These Trends in Current Policy

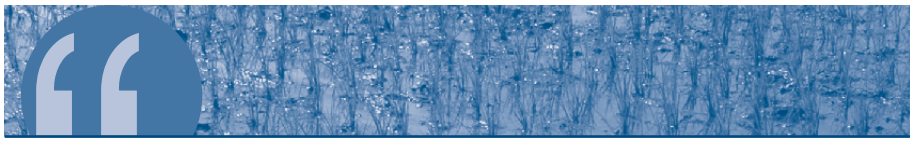
The defense community has three major opportunities to address these trends and implications through policies aimed at the Middle East, Africa, and Central Asia. First, the establishment of AFRICOM demonstrates recognition that the military and intelligence communities should be more anticipatory, rather than reactionary. In planning for the roles and missions of this command, DoD—in partnership with the intelligence community—should develop strategies to mediate effects of HIV/AIDS,

Sgt. Freddy Valdez, assigned to the 27th BSB, 4th BCT, 1st Cav. Div., attempts to reach a soccer ball before an Iraqi MTR Soldier with the 10th IA Div., can kick the ball away during a soccer match at Contingency Operations Base Adder in southern Iraq Oct. 23, 2008. The contest was an effort to further strengthen the two units' partnership in stabilizing Iraq. (Photo by Maj. Jesse Henderson; courtesy U.S. Army)

conflict-driven migration, and youthful populations. For example, the military could devise programs that engage youth through leadership training and through their involvement in building infrastructure alongside soldiers. AFRICOM may also offer more opportunities to partner with African militaries to help them combat HIV/AIDS, by expanding HIV/AIDS education and leadership training—some of which can be funded under existing foreign military training and education programs.

Second, DoD could continue to take demographic issues into account when crafting the next iterations of policy planning documents, as it did in the latest National Defense Strategy (see brief on page 26). The NDS and other policy reports analyze long-term trends (like climate change, globalization, and technology) and help shape the types of programs DoD funds, the capabilities the military develops, and priorities for intelligence collection. Analyzing demographic issues in the Middle East and Central Asia is also a robust piece of the strategy for winning the "long war."

Finally, the defense and intelligence communities must recognize their limited ability to influence these trends. According to the standard division of labor within the U.S. government, the intelligence community is tasked with providing analysis, not recommending or implementing policies that address these population concerns. And, while it is within the scope of the military's mandate to prepare for humanitarian missions and stability operations, devising education programs for youthful populations and even distributing aid requires the help of partners in other agencies. DoD will need to partner with the U.S. Agency for International Development and non-governmental organizations; many of these agencies are better suited to work with local populations and can function as advisors and planners.



The military does not always have the tools to address these population and development issues, but by drawing on a wider community for support, they lessen the chances that they will have to deal with the consequences.

While interaction among the agencies at all personnel levels is frequent, fostering the type of large-scale collaboration necessary to address demographic trends requires two key steps. First, it needs the support and encouragement of senior leadership, both political appointees and career civil servants, in all departments. Second, top-down direction from Congress and the executive branch could help institutionalize the process.

Additionally, in its dealings with Congress, the military can voice its support for development in the Middle East, Africa, and Central Asia, and communicate the connections between demographic issues and security. DoD could also encourage congressional funding for necessary programs. The military does not always have the tools to address these population and development issues, but by drawing on a wider community for support, they lessen the chances that they will have to deal with the consequences.

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REPORT ONLINE

The latest National Defense Strategy, released in June 2008 by Secretary of Defense Robert M. Gates, recognizes the security risks posed by both population growth and deficit—due to aging, shrinking, or disease—the role of climate pressures, and the connections between population and the environment: http://www.defenselink.mil/news/2008%20national%20defense%20strategy.pdf

The Department of Defense's Stability Operations Capabilities notes that "integrated military and civilian operations are the now the norm with most military operations taking place in the midst of civilian populations. U.S. military forces must be prepared to support civilian stabilization and reconstruction efforts and to lead and conduct these missions when civilians cannot": http://www.defenselink.mil/policy/sections/policy_offices/solic/stabilityOps/

LTC Shannon Beebe (USA), senior Africa analyst at the Department of the Army, wrote in the *New Security Beat* that "security in Africa depends heavily on non-military factors that fall outside the traditional purview of the armed forces. For AFRICOM to be successful, it must approach security as a mutually beneficial proposition, not a zero-sum game": http://newsecuritybeat.blogspot.com/2007/07/guest-contributor-shannon-beebe-on.html?showComment=1221690660000#c9183747927274650178

Sgt. Catherine Olivarez looks over a toddler during a medical civil action program, July 24, 2008, at a village school in Goubetto, Djibouti. Olivarez is a medic with the 345th Civil Affairs Brigade working with Combined Joint Task Force-Horn of Africa (JTF-HOA). On Oct. 1, 2008, the Department of Defense stood up U.S. Africa Command, or AFRICOM. (Photo by Air Force Tech Sergeant Jeremy T. Lock; courtesy JTF-HOA)

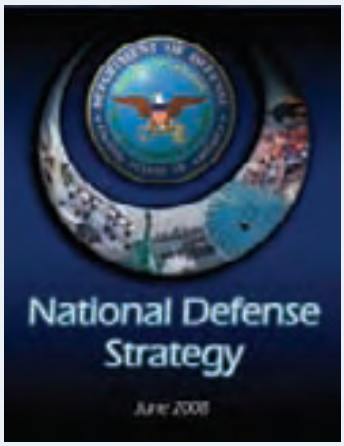
Environment, Population in the 2008 National Defense Strategy

by JENNIFER DABBS SCIUBBA

Source: The New Security Beat, http://newsecuritybeat.blogspot.com

The 2008 National Defense Strategy (NDS; Gates, 2008), released by the U.S. Department of Defense (DoD) in July, delivers the expected, but also throws in a few surprises. The NDS reflects traditional concerns over terrorism, rogue states, and the rise of China, but also gives a more prominent role to the connections among people, their environment, and national security. Both natural disasters and growing competition for resources are listed alongside terrorism as some of the main challenges facing the United States.

This NDS is groundbreaking in that it recognizes the security risks posed by both population growth and deficit—due to aging, shrinking, or disease—and the role of climate pressures, and the connections between population and the environment. In the wake of the Intergovernmental Panel on Climate Change reports on climate change and the 2007 CNA study on climate change and security, Congress mandated that the NDS include language on climate change. The document is required to include guidance for military planners to assess the risks of projected climate change on the armed forces (see Section 931 of the FY08 National Defense Authorization Act). The document also recognizes the need to address the "root causes of turmoil"—which could be interpreted as underlying population-environment connections, although the authors provide no specifics. One missed opportunity in the NDS is the chance to explicitly connect ungoverned areas in failed or weak states with population-environment issues.



What really stands out about this NDS is how the authors characterize the future security environment: "Over the next twenty years physical pressures—population, resource, energy, climatic and environmental—could combine with rapid social, cultural, technological and geopolitical change to create greater uncertainty," they write. The challenge, according to DoD, is the uncertainty of how these trends and the interactions among them will play out. DoD is concerned with environmental security issues insofar as they shift the power of states and pose risks, but it is unclear from the NDS what precisely those risks are, as the authors never explicitly identify them. Instead, they emphasize flexibility in preparing to meet a range of possible challenges.

The environmental security language in this NDS grew out of several years of work within the Department, primarily in the Office of Policy Planning under the Office of the Under Secretary for Defense, to study individual trends, such as population, energy, and environment, as well as a series of workshops and exercises outlining possible "shocks." For example, the NDS says "we must take account of the implications of demographic trends, particularly population growth in much of the developing world and the population deficit in much of the developed world."

Finally, although the NDS mentions the goal of reducing fuel demand and the need to "assist wider U.S. Government energy security and environmental objectives," its main energy concern seems to be securing access to energy resources, perhaps with military involvement. Is this another missed opportunity to bring in environmental concerns, or is it more appropriate for DoD to stick to straight energy security? The NDS seems to have taken a politically safe route: recognizing energy security as a problem and suggesting both the need for the Department to actively protect energy resources (especially petroleum) while also being open to broader ways to achieve energy independence.

According to the NDS, DoD should continue studying how the trends outlined above affect national security and should use trend considerations in decisions about equipment and capabilities; alliances and partnerships; and relationships with other nations. As the foundational document from which almost all other DoD guidance documents and programs are derived, the NDS is highly significant. If the Obama administration continues to build off of the current NDS instead of starting anew, we can expect environmental security to play a more central role in national defense planning. If not, environmental security could again take a back seat to other national defense issues, as it has done so often in the past.

Climate Change, Demography, Environmental Degradation, and Armed Conflict

CLIONADH RALEIGH and HENRIK URDAL

Climate change is expected to alter the availability of freshwater, the productive capacity of soils, and patterns of human settlement. But we do not know the extent and geographical distribution of these changes, nor can we know how climate-related environmental change may influence human societies and political systems. The most dire predictions warn that climate change may greatly increase the risk of violent conflict over increasingly scarce resources, such as freshwater and arable land. We argue that such forecasts would be more accurate and less sensational if they were based on the relationships between demography, environment, and violent conflict found in the recent past.

Land degradation, freshwater availability, and population density and change are important factors that many scholars argue have both influenced the risk of conflict in the past and will be strongly influenced by climate change. As previous quantitative studies have found mixed evidence for the resource scarcity and conflict nexus, we sought to reconcile these diverse findings by looking below national aggregates at local-level data. In our study, we found that local-level demographic and environmental factors do have some effect on conflict risk, but are generally outweighed by political and economic factors.[1]

Building on propositions from the literature on environmental security, we have identified potential links between natural resource scarcity and violent conflict. Combining these propositions with environmental change scenarios from the Intergovernmental Panel on Climate Change (IPCC), we tested hypotheses about the expected relationships in a statistical model with global coverage. While previous studies have mostly focused on national-level aggregates, we used a new approach to assess the impact of environmental change on internal armed conflict by using geo-referenced (GIS) data and geographical, rather than political, units of analysis.

Obviously, climate change may bring about more severe and more abrupt forms of environmental change than we have experienced in the past. While this argument is frequently invoked to support dire claims about climate change and conflict, major changes are likely to be the result of smaller changes compounding over a considerable period of time. Also, while environmental change may be more severe in the future than the past, we are unable to assess the extent to which increased technological and institutional capacity will enhance our adaptability to the effects of climate change.

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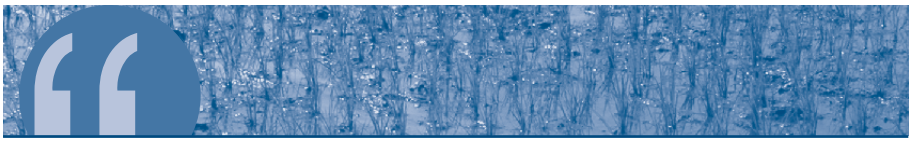


While abrupt displacements may happen, we primarily expect to see climate change causing a gradual migration by people searching for more fertile land—or for other economic opportunities to replace lost livelihoods.

Societal Consequences of Climate Change: Literature Review

As the focus on environmental consequences of climate change increases, greater attention has been paid to climate change's potential influence on patterns of war and peace (e.g., Renner, 1996; Homer-Dixon & Blitt, 1998; Rahman, 1999; Klare, 2001; Brauch, 2002; Purvis & Busby, 2004; CNA, 2007; Buhaug et al., 2008; Burke & Parthemore, 2008; Raleigh et al., 2008; Salehyan, 2008). The literature on climate change and security focuses on two interrelated processes expected to result in resource scarcity. First, increasing temperatures, precipitation anomalies, and extreme weather are expected to aggravate the ongoing degradation of environmental resources (Renner, 1996; Homer-Dixon & Blitt, 1998; Klare, 2001; Purvis & Busby, 2004; Buhaug et al., 2008).

Second, scholars warn that rising sea levels, as well as more extreme weather conditions, will force millions of people to migrate, potentially leading to higher pressures on resources in the destination areas and subsequently fostering competition over resources (Renner, 1996; Rahman, 1999; Barnett, 2001; Oxfam, 2007; Renaud et al., 2007; Raleigh et al., 2008). Although climate change is usually viewed as a potential future threat, some argue that global climate change has already been a contributing factor in current conflicts such as the Darfur crisis (Byers & Dragojlovic, 2004; Ki-moon, 2007).

Although they warn against overstating the relationship between climate change and armed conflict, Jon Barnett (2001), as well as Nigel Purvis and Joshua Busby (2004), accept that the depletion and altered distribution of natural resources likely to result from climate change could, under certain circumstances, increase the risk of some forms of violent conflict. It is not likely to be a major or sufficient cause of conflict, but may form a mounting environmental challenge that could play a contributing role (Brauch, 2002; Tänzler & Carius, 2002).

Climate change is likely to influence the capacity of many areas to produce food. Some areas may experience a reduction in crop yields, but others are likely to benefit. While an increase in temperature of a few degrees could generally increase crop yields in temperate areas, greater warming may reduce agricultural output. In tropical areas, where dryland agriculture dominates, even minimal increases in temperature may be detrimental to food production (IPCC, 2001). Adverse changes in temperature and precipitation are likely to intensify the degradation of soil and water resources, although adaptive behavior could mitigate these impacts, since land use and management have been shown to have a greater impact on soil conditions than the indirect effect of climate change.

According to the IPCC (2001), 1.7 billion people currently live in countries that are water-stressed, meaning that they use more than 20 percent of their renewable water supply. This number is projected to increase as population grows and industries intensify; climate change may aggravate this trend by decreasing streamflow and groundwater recharge. Non-climatic factors may influence freshwater availability and quality more than climate change, so good water management may significantly reduce vulnerability. However, in areas where vulnerability increases and water management fails, increased freshwater scarcity is likely.

Table 1: Summary Results of Empirical Analysis

	ALL COUNTRIES	HIGH-INCOME COUNTRIES	LOW-INCOME COUNTRIES
Low land degradation	Not significant	Higher risk	Lower risk
Medium land degradation	Higher risk	Higher risk	Not significant
Very high land degradation	Higher risk	Higher risk	Not significant
Water scarcity	Higher risk	Higher risk	Higher risk (weak)
Population density	Higher risk	Higher risk	Higher risk
Population growth	Higher risk	Higher risk	Higher risk
Population growth *density	Higher risk	Not significant	Higher risk
Population growth *water scarcity	Higher risk	Not significant	Higher risk (weak)
Population growth *medium degradation	Not significant	Lower risk (weak)	Not significant
Population growth *high degradation	Not significant	Not significant	Not significant
Instability interactions	Negative or not significant	Not significant	Not significant

Note: For actual values, see full results in Raleigh & Urdal (2007).

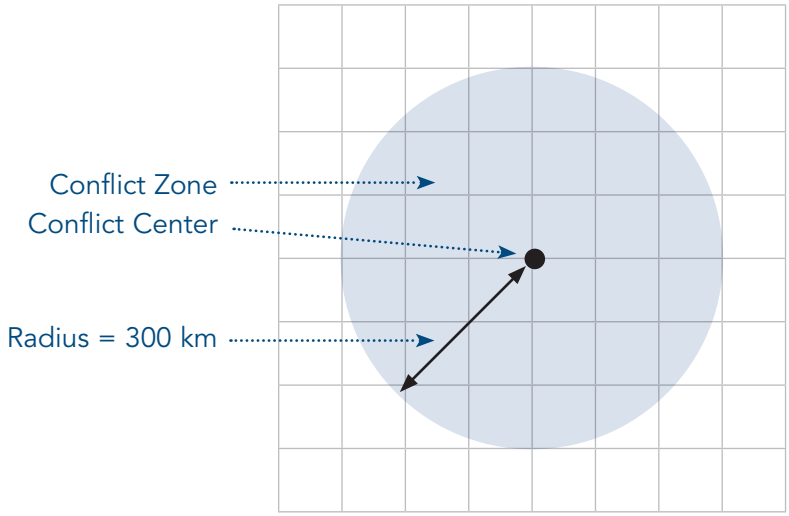
Due to rising sea levels and increased risk of flooding, climate change is expected to contribute to migration from coastal and riverine settlements (IPCC, 2001). Extreme weather events and flooding may cause substantial, sudden, and acute displacement of people. However, the most dramatic form of change—sea-level rise—is likely to happen gradually. Improved forecasting skills will make adaptation easier and reduce the problem of population displacements (Chimeli et al., 2002). While abrupt displacements may happen, we primarily expect to see climate change causing a gradual migration by people searching for more fertile land—or for other economic opportunities to replace lost livelihoods.

Kahl (2006) identifies two distinct "state-centric" causal pathways from resource scarcity to conflict: the "state failure" and the "state exploitation" hypotheses. Both start from the premise that resource scarcity may put severe pressure on both society at large and on state institutions. Lower agricultural wages and economic marginalization can lead to rural-to-rural migration, potentially causing inter-ethnic conflicts over land, and migration from rural to urban areas, leading to urban "hotspots." The state failure hypothesis posits that resource scarcity will weaken state institutions and provide opportunities for potential rebels to challenge state authority. The state exploitation hypothesis suggests that resource scarcity may be an opportunity for weakened states to bolster their support base by mobilizing ethnic groups to capture scarce resources. However, quantitative studies (Esty et al., 1998; Hauge & Ellingsen, 1998; Urdal, 2005; Theisen, 2008) have found mixed evidence for the resource scarcity and conflict nexus.

Testing the Climate Change and Conflict Scenario: Methodology

In our model, we tested whether areas with high levels of resource scarcity—which is likely to become more prevalent as a result of climate

Figure 1: Conflict Zones Upon Grid Squares



Globally, medium to high levels of land degradation are related to increased conflict, as are very high levels of water scarcity, but the relative increases in risk are quite small.

change—have been more susceptible to conflict in the past. We assumed that population density, freshwater scarcity, and environmental degradation would be associated with a higher risk of conflict if they occurred in areas with high population growth. We further assumed that the effects of demographic and environmental factors are stronger in poor countries than in wealthy ones, and stronger in periods of regime collapse and political transition.

For this sub-national study, we created a geospatial dataset by dividing the globe into 100 km by 100 km squares. Using the PRIO/Uppsala dataset, we identified the location of armed conflicts from 1990-2004 (Buhaug & Gates, 2002; Gleditsch et al., 2002), coding all grids within a 300-km radius as part of the conflict zone (see Figure 1). We used geographical data on human-induced soil degradation from the International Soil Reference and Information Centre (ISRIC), data on easily available freshwater from TERRASTAT, and population data from the Center for International Earth Science Information Network (CIESIN). We also controlled for state-level factors like GDP per capita and national regime type.

Results

We assessed the risk of conflict for a global sample, and then for richer and poorer states separately. Our disaggregated analysis shows that demographic and environmental variables have a very moderate effect on the risk of civil conflict (see Table 1 for a summary).

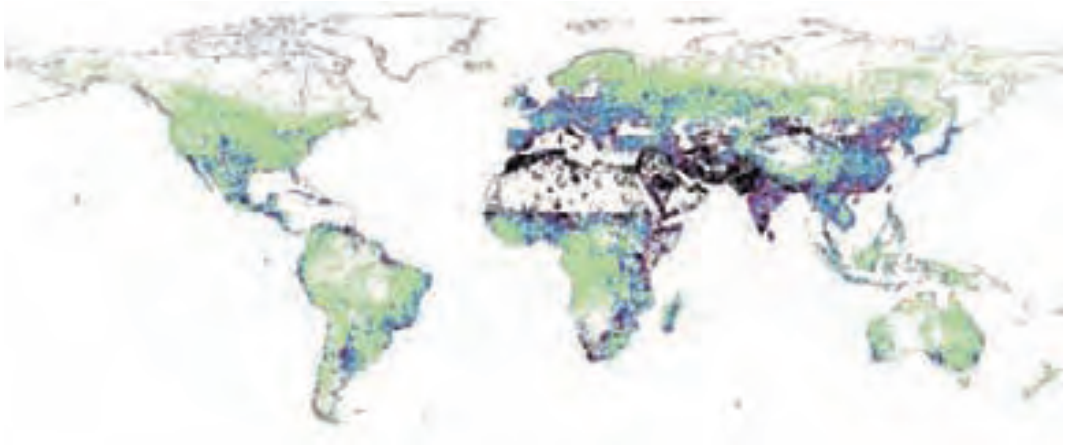
Globally, medium to high levels of land degradation are related to increased conflict, as are very high levels of water scarcity, but the relative increases in risk are quite small. Increasing levels of land degradation increase the risk of conflict from a baseline of 1 percent to between 2-4 percent. Freshwater scarcity appears to exert a somewhat stronger effect, increasing the risk of conflict to 6 percent for areas with very high levels of scarcity.

High population density, measured locally, is a consistently strong predictor of armed conflict. However, population density and conflict are presumably correlated, as densely populated areas and large cities are attractive locations for conflict because not only do they provide better opportunities for organizing and financing conflict, they also represent strategic targets (Hegre & Raleigh, 2007).

Based on our literature review, we expected that the interactions between demand-induced scarcity (measured by population growth) and supply-induced scarcity (represented by land degradation, water scarcity, and population density) were likely to produce multiple stresses that could trigger resource scarcity conflicts. In the global model, only the interaction between population growth and water scarcity, as well as that between population growth and density, were statistically significant.

Separating the group by income confirms the well-established importance of wealth and political systems. Lower levels of GDP are the most important predictor of armed conflict. States with low GDP depend more on their environment for individual and state income than states with higher GDP, and also have

Figure 2: Water Scarcity Index for Contemporary Conditions



The water scarcity index describes the relationship between water availability and the number of people that can be supported by that water supply. The scarcity index is expressed in terms of the number of people per flow unit where a flow unit of water is equal to 1 million cubic meters per year.

Source: Levy et al. (2008).

WATER SCARCITY INDEX

- Water Barrier (>2000 people/flow unit)
- Water Scarcity/Stress (600–2000 people/flow unit)
- Populations Vulnerable to Water Stress (100–600 people/flow unit)
- Adequate Supply (<100 people/flow unit)
- Low Density Population

a lower capacity to attenuate tensions arising from degradation. However, our results show that resource scarcity affects the risk of conflict less in low-income states than in wealthier states. And while political instability is a strong driver of internal conflict in poor states, it does not seem to interact with demographic and environmental factors to increase the risk of conflict.

Recommendations for Future Research

Our models are more explanatory than many comparable cross-national studies, partly due to the inclusion of geo-referenced environmental and demographic data. Since conflict often does not occur throughout entire countries, additional localized data on conflict needs to be incorporated into future models to develop a comprehensive understanding of the links between conflict and demographic and environmental changes.

Moreover, we believe a clearer link between the physical changes associated with environmental variables and the political process of rebellion must be established. The use of local measures of income, state capacity, and ethnic relationships will significantly clarify the environment-conflict nexus and help analyze the role of state policies and market fluctuations in mediating it.

Our results caution against a disproportionate focus on environmental factors—including climate change—in causing conflict and instability in the developing world. By paying greater attention to how resources are distributed and how political institutions create vulnerability to climate change, we can better assess where, and under what circumstances, environmental factors contribute to or catalyze conflict. However, as future climate changes occur with greater frequency and intensity, any assumptions about the future must consider that the thresholds for both environmental change and political instability will undoubtedly fluctuate.

REPORT ONLINE

The full article on which this commentary is based, "Climate change, environmental degradation and armed conflict," was published in a special issue of *Political Geography* on climate change and conflict (Volume 26, Issue 6, August 2007): http://linkinghub.elsevier.com/retrieve/pii/S0962629807000856

The Uppsala Conflict Database is a free resource on armed conflicts; currently, it includes information on 124 conflicts for the period 1989-2007: http://www.pcr.uu.se/gpdatabase/search.php

Armed Conflict Location and Event Data (ACLED) is an event-based dataset based on the Uppsala Conflict Database, which records the location and date of conflict occurrences in Africa. Version 1.2 is available online: http://www.prio.no/CSCW/Datasets/Armed-Conflict/Armed-Conflict-Location-and-Event-Data/

The World Bank's Social Development Division convened a workshop and commissioned overview papers on the "Social Dimensions of Climate Change" on March 5, 2008: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/0,,contentMDK:21659919~pagePK:210058~piPK:210062~theSitePK:244363,00.html

For a balanced report on climate change and migration, see *Future Floods of Refugees: A Comment on Climate Change, Conflict and Forced Migration,* by Vikram Odedra Kolmannskog (Norwegian Refugee Council, 2008): http://www.nrc.no/arch/_img/9268480.pdf

Note

1. This article is based on a study published in *Political Geography* (Raleigh & Urdal, 2007).

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Migration as the Demographic Wild Card in Civil Conflict: Mauritius and Fiji

CHRISTIAN LEUPRECHT

Research on the relationship between demographic change and internecine violence has gained some momentum in recent years (see, e.g., Dabelko, 2005). However, this work has mostly been confined to examining age structure phenomena such as youth bulges. By contrast, the intervening variable of migration is strikingly absent—even though migration is the third in the troika of core demographic variables, alongside fertility and mortality. Yet its absence is also understandable, because accurate and consistent data in conflict areas are very difficult to obtain. As a result, we actually know embarrassingly little about the bearing (if any) the demographic shifts precipitated by in- or out-migration have on internecine conflict. In this article, I focus on the demographic disequilibrium that results from migration and its impact on ethnic relations and conflict, using the cases of Mauritius and Fiji.

Since the paucity of data currently thwarts any attempt to test hypotheses that depend on a thorough statistical analysis (a large-n quantitative approach), I used a most-similar-systems critical case-study approach to compare different outcomes with respect to ethnic conflict in the small-island states of Mauritius and Fiji.[1] The conditions in these islands are, for the social sciences, a fair real-world approximation of controlled laboratory experiments; these small, (fairly) closed systems allow us to control for variables in a way that is virtually impossible to do with complex conflicts in larger countries.

Notwithstanding ominous predictions to the contrary, demographic trends in Mauritius have actually proven to be a source of political stability. However, the converse holds true for Fiji.

Comparing Mauritius and Fiji

Although they are located on different continents, a comparison of Mauritius and Fiji is appropriate because their colonial, economic, political, and social histories are similar.

About 850,000 people live in Fiji, while Mauritius is home to about 1.2 million people. At 720 square miles, Mauritius has less than one-tenth of Fiji's landmass, and is among the most densely populated countries on the planet. Indian migrants—who originated as indentured laborers shipped in by their British colonizers to work on the sugar plantations—comprise a substantial proportion of the population in both countries. Mauritius has a highly heterogeneous society, with 15 linguistic groups and four world religions. Although the main ethnic cleavage is between the Creole minority (27 percent) and the Indian majority (68 percent), the high degree of differentiation and stratification within Mauritian society makes ethnic

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categories less powerful than expected.[2] In Fiji, about half the population is of Indian descent, while the other half is native Melanesian with a Polynesian admixture.

If density, natural increase, and ethnic heterogeneity are the sole determinants of internecine violence, then Mauritius beat the odds. On the advent of Mauritius' independence in 1968, Nobel Laureate James Meade, a British commission, and others arrived at ominous conclusions about the country's prospects for ethnic harmony, economic development, and political stability (Meade, 1961; Titmuss & Abel-Smith, 1968; Naipaul, 1973). Rapid population growth, the absence of economic growth, and growing population density on a small island with no natural resources caused some concern among policymakers. Independence also flamed the inter-ethnic fires, for the Franco-Mauritian and Creole communities saw independence as a ploy by the Indian majority to gain control of the state apparatus. In addition, the 1960s witnessed considerable labor and inter-communal unrest on Mauritius.

By contrast, prior to Fiji's independence in 1970, the experts were optimistic. Yet the outcomes in Mauritius and Fiji were contrary to expectations. Civil conflict in Fiji intensified, coming to a head in 1987 when, for the first time in its post-independence history, a party headed by a Fijian of Indian ancestry won the majority of seats. In response, some native Fijians staged a military coup, followed by subsequent coups in 2000 and 2006.

Could demographic patterns explain why Mauritius defied dire predictions while Fiji continues to struggle with civil tensions? While the presence of an indigenous population that considers Fiji its ancestral homeland is an indisputable source of tension, this explanation does not tell us why civil conflict worsens when it does. In contrast, the claims I advance about demographics in general, and migration in particular, distinguish themselves from much of the literature precisely because they have intrinsic predictive potential.

Migratory Trends

Mauritius is today the only country in the world where the Indian diaspora enjoys a two-thirds majority. As depicted in Figure 1, the Indian population of Mauritius quickly grew from zero in 1834 to a majority in the 1860s; since then, the proportion has remained fairly stable (Lutz & Wils, 1994).

In Fiji, the immigration of indentured Indian laborers occurred later; some 60,000 of these *girmitiyas* were brought to Fiji between 1879 and 1916. The demographic impact of this population movement was compounded by a subsequent wave of Indian immigration to Fiji between the world wars. In absolute terms and relative to the native population, migration to Fiji was disproportionately smaller than to Mauritius. As Figure 2 shows, since the onset of Indian immigration to Fiji, the numerical gap between Indians and native Melanesians has always been much narrower than the gap between Indians and the "general population" in Mauritius.

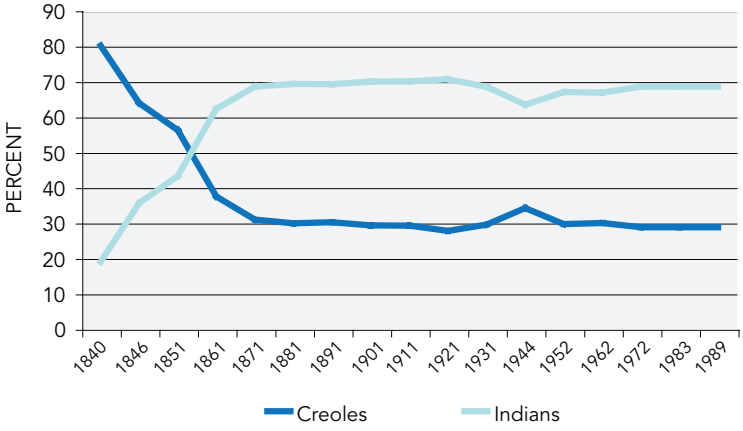
The differentials between the two main population groups on each island are largely a function of colonial migratory policy—that is, colonial migratory policy had the unintended consequence of producing a clear Indian majority in Mauritius. In Fiji, by contrast, it generated only a sizeable Indian minority.

Effect on Age Structure

In another unintended consequence of colonial migratory policy, the Indian minority in Fiji inadvertently challenged native predominance. Indian migration to Fiji postdates migration to Mauritius by several decades. Having entered the demographic transition later, the age structure of Indians in Fiji was comparatively younger than that of Indians in Mauritius. The age-structure differential is partially accountable for the rapid population growth among Indians in Fiji during the first half of the 20th century. While immigration had virtually ceased

Demographic trends in Mauritius have actually proven to be a source of political stability. However, the converse holds true for Fiji.

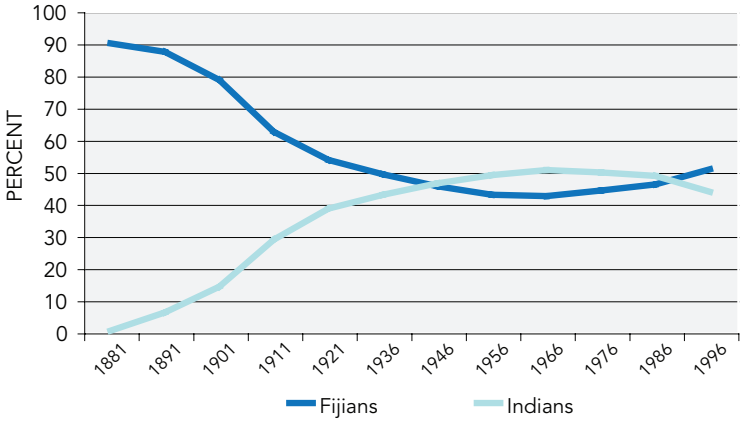
Figure 1: Mauritius, Proportions of Ethnic Groups (1840–1989)



Source: Mauritius Central Statistical Office (1973); Dinan (2002).

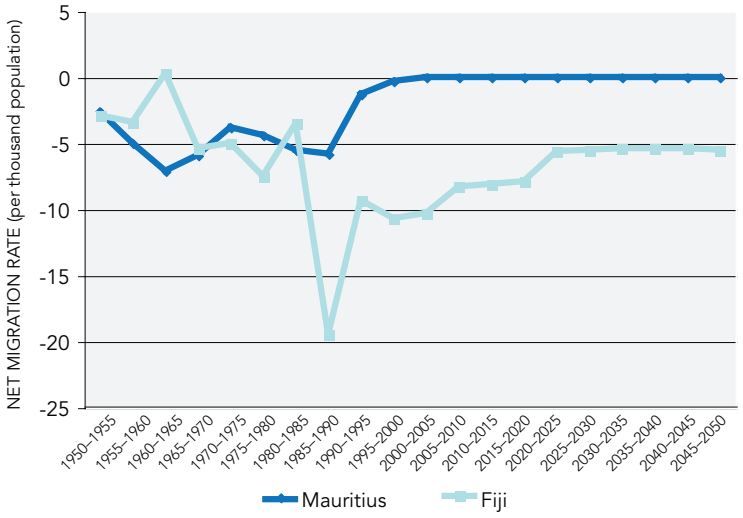
Note: Data after 1973 are based on estimates because Mauritius stopped collecting data by ethnic group at that time.

Figure 2: Fiji, Proportion of Ethnic Groups (1881–1996)



Source: Fiji Islands Bureau of Statistics (2007).

Figure 3: Mauritius vs. Fiji, Net Migration Rate (1950–2050)



Source: UN Department of Economic and Social Affairs, Population Division (2007).

by 1921, Fiji's Indian population quadrupled between 1921 and 1966.

If population growth remains constant, the total fertility rate (TFR) must be declining. However, even if TFR is declining, the number of women of childbearing age will continue to grow, due to population momentum. As a result, the crude birth rate may continue to rise, thus producing a sizeable youth cohort. These growth dynamics caused Indians to outnumber native Melanesians in Fiji by the end of World War II and approach an absolute majority by the late 1950s (Meller & Anthony, 1968; Milne, 1981).

Migrating populations tend to be fairly young, and accordingly, they reproduce at disproportionately high rates. Native populations may fear being "swamped" by migration. In addition, native populations may gradually end up being outnumbered by migrants due to differentials in natural increase. Neither phenomenon threatened political stability in Mauritius. Mauritius' native population did not feel its territory was being "swamped," and colonial migratory policy unintentionally preordained an incontrovertible Indian majority. In Fiji, by contrast, the feeling of being "swamped" was compounded by an unintended challenge to native plurality. Although in both cases the demographic outcome of colonial migratory policy was unintended, this outcome was not necessarily unpredictable. The impact of migration on conflict is a man-made problem; the way migration is managed (or not) can determine its potential for mitigating or escalating a conflict.

Both cases show evidence of significant differentials in age structure. Today, the ethnic populations on Mauritius are similarly structured. In contrast, Fiji's minority population is younger than the majority population, whose demographic position has been undermined further by emigration. As a result, the minority is now in a position to challenge the majority's plurality.

Military checkpoint after the 2006 coup, Fiji (Courtesy photobucket user loaspoa; http://i39.photobucket.com/albums/e159/loaspoa/fiji%20aftur/checkpoint_near_qeb.jpg)

Migration, Age Structure, and Conflict

Demographic change *per se* never had a significant impact on conflict in Mauritius because the Indian population consolidated its majority early on. All population groups in the island state have been aging rapidly since the 1960s, and, as a result, no one group has the young age-structure dynamics that may call Indian hegemony into question. In Fiji, migration created a very young Indian population that reproduced rapidly and, in the process, undermined the hegemonic demographic position of the native population. However, the younger population structure among Fiji's native population made it impossible for Indians to consolidate their temporary plurality. Figures 1 and 2 depict inter-communal population trends in Mauritius and Fiji, while Figure 3 visualizes why migration—particularly the past, present, and projected out-migration of Indo-Fijians—functions as a source of instability in Fiji. Both the size and rate of immigration and subsequent emigration rapidly changed the size and age structure of the Indo-Fijian population.

REPORT ONLINE

Christian Leuprecht discussed demographic shifts and civil conflict at an event at the Wilson Center on June 13, 2007: http://www.wilsoncenter.org/index.cfm?topic_id=1413&fuseaction=topics.event_summary&event_id=238429

The UN Population Division's World Migrant Stock database provides estimates of refugees and migrants by country and region for every five years from 1960-2005: http://esa.un.org/migration/index.asp?panel=2

The UN's Small Island Developing States Network helps small islands face several challenges, including remoteness; poor connectivity; limited human and technological capacity; and economic and environmental vulnerability: http://www.sidsnet.org/

Ethnopolitics, the Journal of the Specialist Group on Ethnopolitics and the Association for the Study of Nationalities, is soliciting submissions for a special issue on the relationship between demographic change and ethnic politics/conflict/relations. Contact Christian Leuprecht, guest editor, at christian.leuprecht@rmc.ca with prospective submissions or inquiries: http://www.ethnopolitics.org/ethnopolitics/cfp.html

The impact of migration on conflict is a man-made problem; the way migration is managed (or not) can determine its potential for mitigating or escalating a conflict.

In Mauritius, by contrast, the slower initial rate of change and subsequent equilibrium in population size and age structure could have contributed to the relative stability of inter-communal relations on Mauritius.

This comparison of Mauritius and Fiji suggests that the most volatile situations are those where a majority's demographic dominance is called into question, but where the same group is eventually able to recapture a demographically hegemonic position. This recapture may be due to its younger age structure, co-ethnic immigration, or emigration by the other group. A group with a younger age structure that regains a demographically dominant position is problematic not only because the group may use its numerical superiority to regain dominance and avenge past grievances, but also because of the general link between youthful populations and political instability.

I am not arguing that demography and migration are deterministic or monocausal explanations for conflict. Still, some important conclusions follow from this comparison. Strong differences and some similarities between Mauritius and Fiji were, at their root, attributable to migration, including demographic changes and relative differences in age structure between ethnic groups.

This study thus confirms that migration is an intervening variable in the different outcomes of ethnic relations in the two island states. Migration turns out to be particularly problematic when a native population's majority (or even its plurality) is challenged temporarily by migration, but the native population's age structure makes it probable that it may one day recapture a position of demographic dominance. The propensity for serious political instability—and possibly violence—appears to be especially high once the native population is able to consolidate its hegemonic demographic position, a finding that is echoed in a recent quantitative study (Toft, 2007).

This conclusion is not just significant for Mauritius and Fiji, but for all small island developing states. Many small island states are ethnoculturally, religiously, and linguistically diverse. As a result, these states are realizing that managing civil relations is a prerequisite for achieving their economic and environmental goals. Ascertaining demographic—and especially migratory—pat-

Street market in Port Louis, Mauritius (Courtesy flickr user austinevan; http://www.flickr.com/photos/austinevan/2377033631)

terns that may prove particularly problematic for civil relations is a significant contribution toward attaining these goals.

Notes

1. This article draws its methodological inspiration from Don Horowitz's (1989) piece comparing differences in outcome in Sri Lanka and Malaysia. Mauritius and Fiji are among 38 UN-member Small Island Developing States; another 14 small island states are either not UN members or associate members of the regional commissions.

2. Mauritian Creoles trace their origins to Madagascar and East Africa, especially Mozambique.

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Beginning the Demographic Transition: Very Young and Youthful Age Structures

ELIZABETH LEAHY

In recent years, scholars, policymakers, and the media have paid increasing attention to the potential challenges of aging populations in industrialized countries in Europe, North America, and East Asia. These countries have crossed into the far reaches of the "demographic transition," the process whereby high birth and death rates decline, producing smaller family sizes and longer life expectancies. The average fertility rate in Japan—which, along with Italy, has one of the world's oldest populations—has been below replacement level since approximately 1965, and is expected to remain below replacement level until the end of this century (UNPD, 2007).

Scholars and policymakers are concerned about the economic consequences of population aging, including the difficulty of maintaining pension and health care systems as the working proportion of the population declines and the proportion of elderly rises. Yet these legitimate economic concerns have not altered the fact that historically, the critically serious problems of undemocratic governance and violent political strife have been concentrated in countries at the opposite end of the demographic spectrum, whose youthful populations continue to grow.

Population Action International's (PAI) 2007 report *The Shape of Things to Come: Why Age Structure Matters to a Safer, More Equitable World* defines very young and youthful age structures as those just beginning the demographic transition. In these countries, mortality rates have declined, and although fertility rates are starting to inch downward, they are still far above replacement level. The vast majority of the population is younger than 30; in some cases, this proportion can be as high as 77 percent. Such countries will continue to experience population growth for the foreseeable future.

Between 1970 and 1999, countries with a very young age structure were four times as likely as those at the end of the demographic transition to have experienced outbreaks of civil conflict (Leahy et al., 2007). Among countries with a youthful age structure, the ratio diminished, but they were still twice as likely to suffer from internal strife as those with a mature structure (in which at least 55 percent of the population is older than 30). Moreover, the pattern has continued, with six out of nine new outbreaks of civil conflict between 2000 and 2006 occurring in countries with very young or youthful age structures. Due to the complex linkages to other issues, there is no direct cause-and-effect relationship between demographics, conflict, and governance. Still, the association between age structure and development is powerful, and warrants a higher priority for population and reproductive health on policymakers' agendas.

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Beginning the Demographic Transition: Very Young Age Structures

In countries with a very young age structure, roughly two-thirds or more of the population is under the age of 30. In 2005, 62 countries representing 14 percent of the world's total population fell into this category—and all had a fertility rate higher than three children per woman. These countries are among the least developed in the world; their average gross national income (GNI) per capita in 2005 was $827 (World Bank, 2007). In addition to a relatively high likelihood of civil conflict, these countries have autocratic or only partially democratic governments. In the last three decades of the 20th century, only 13 percent of countries with a very young age structure had fully democratic governments, compared with 83 percent of countries with a mature age structure.

Countries with a very young age structure are concentrated in sub-Saharan Africa, with only a few exceptions.[1] Meanwhile, only four countries in sub-Saharan Africa—Gabon, Mauritius, Réunion, and South Africa—have progressed far enough through the demographic transition to have passed beyond the very young age structure category.

At the beginning of the demographic transition, age structures follow the model of the classic "population pyramid," with each successively younger age group comprising a larger share of the total population than the previous cohort. Better public health and nutrition lower mortality rates. However, fertility rates remain high, due to:

- Women's low social status and/or lack of educational attainment;
- Insufficient access to an array of modern contraceptive methods;
- Large desired family size for reasons of economic productivity or social status; and
- Parents' lack of confidence that most of their children will survive to adulthood.

> Between 1970 and 1999, countries with a very young age structure were four times as likely as those at the end of the demographic transition to have experienced outbreaks of civil conflict.

While it is likely that fertility rates in countries at the beginning of the demographic transition will continue to decline over time, their populations will still continue to grow rapidly—in some cases, even double or triple—in the next few decades.

Nigeria

While most countries have experienced great demographic change in recent decades, those with a very young age structure have remained largely static, and a few have actually reversed their course along the demographic transition.

Nigerians participate in traditional theater with a family planning theme in Ogun state. (© CCP, courtesy of Photoshare)

A village man and a community-based distribution agent are engaged in a spirited conversation about family planning during a village gathering near the town of Awassa in central Ethiopia. The man has four children and wants four more, and is against family planning. (© 2005 Virginia Lamprecht, courtesy of Photoshare)

The share of Nigeria's population under age 30 in 2005 was actually 1.5 percent *greater* than in 1975—a remarkable anomaly given that most countries have made at least slight progress since then toward a more balanced population distribution (UNPD, 2007).

Only eight percent of Nigerian women use a modern contraceptive method. This low rate, combined with large desired family size, is primarily responsible for Nigeria's fertility rate of nearly six children per woman (National Population Commission & ORC Macro, 2004). One-fifth of Nigerian children die before their fifth birthday, and 42 percent of women have never been to school. These major social and public health concerns are partially responsible for Nigeria's stunted economic development. Although it holds the greatest petroleum reserves in Africa and is the eighth-largest oil producer in the world, the country's per capita GNI was $560 in 2005, even lower than the average for countries with a very young age structure (EIA, 2007; World Bank, 2007).

Nigeria also remains hampered by political corruption, instability, and bureaucratic mismanagement, which prevent the government from effectively capitalizing on and fairly distributing income from the country's abundant natural resources. After decades of military rule, Nigeria achieved partial democracy in 1999. The 2007 elections were the first to transfer power among civilians. While international observers generally condemned the elections as blatantly manipulated, the outgoing president's handpicked successor, Umaru Yar'Adua, assumed power relatively peacefully. However, violence targeting foreign oil producers continues to destabilize the Niger Delta region, where rebel takeovers and kidnappings have led major multinational companies to significantly cut back their production levels.

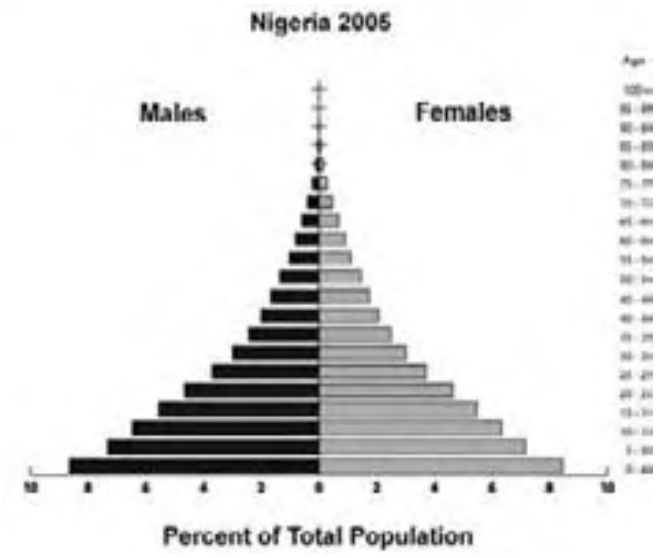
Ethiopia

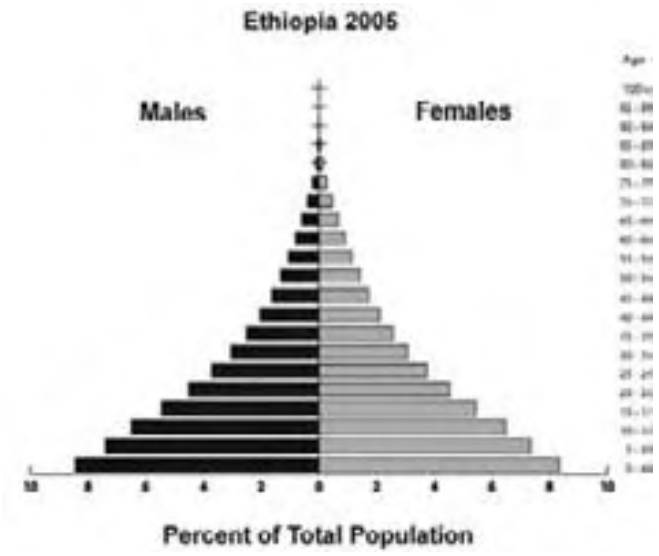
Ethiopia's progress along the demographic transition in the past 30 years has also been slight; the share of its population younger than 30 has remained virtually static. Population growth continues to contribute to a long trajectory of humanitarian crises in Ethiopia. The UN Emergencies Unit for Ethiopia (2003, p. 2)

found that "rapid and unhindered" population growth is a significant factor in exacerbating food shortages. For more than two decades, Ethiopia has been stricken with recurring and, at times, severe food shortages. Due to widespread malnutrition, more than half of all children under age five are stunted, while 47 percent are underweight (Haile, 2004).

Droughts and famine have become more frequent and more severe as, among other reasons, increased population density has led to erosion, the overcultivation of land, and ecological degradation. Most Ethiopians rely on wood and charcoal for energy, and deforestation is extensive—especially in the highlands, where more than 80 percent of the population lives. In 1900, 40 percent of Ethiopia was estimated to be covered by forests; today, this figure stands at less than three percent (Haile, 2005). Ethiopia is one of the poorest countries in the world, with a per capita GNI of $160, about one-fifth the sub-Saharan African average (World Bank, 2007).

Compounding these environmental and economic problems, the vast majority of the population lives in rural areas, where access to modern health facilities is extremely limited. Use of modern contraceptives in rural areas, while increasing in recent years, remains very low, with a contraceptive prevalence rate of only 11 percent—compared to more than 40 percent in urban areas (Central Statistical Agency & ORC Macro, 2006). To merely maintain current primary school enrollment rates—a far cry from the Millennium Development Goal of achieving universal primary education by 2015—the country would need to build an additional 21,000 schools and train more than 280,000 teachers (Haile, 2005).

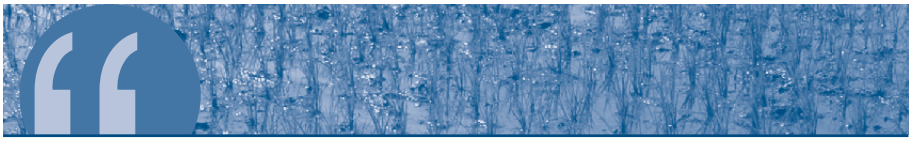




Continuing the Transition: Youthful Age Structures

The progress that countries with a youthful age structure have made along the demographic transition is evident in their population profiles, which reflect a less dramatic proportional increase in the size of each successively younger age group. However, populations in these countries are still growing, as women have an average of between two and four children each. The average per capita GNI in countries with a youthful age structure is $2,429, about three times greater than that of countries with a very young age structure (World Bank, 2007).

Countries with a youthful age structure were about half as likely to experience civil conflict between 1970 and 1999 than those with a very young age structure—and slightly more likely to be democratic (21 percent were rated by the Polity IV project as full democracies, compared



Countries with a youthful age structure were about half as likely to experience civil conflict between 1970 and 1999 than those with a very young age structure—and slightly more likely to be democratic.

with 13 percent of countries with a very young structure). However, countries with a youthful age structure were still significantly more prone to conflict and much less democratic, on average, than those that had advanced further along the demographic transition.

Pakistan

There are fewer countries with a youthful age structure than with a very young age structure. However, the youthful group includes India, Pakistan, and Bangladesh, which together are home to more than one-fifth of the world's total population. Among these three South Asian countries, Pakistan has the most youthful age structure, as its birthrate did not begin declining until the 1990s, 20 years later than Bangladesh. In Pakistan, women now have an average of four children each; in Bangladesh, they average slightly more than three. Although the two countries had the same population (113 million) in 1990, Pakistan's population is projected to be 15 percent greater than its neighbor's by 2050. In Bangladesh, 47 percent of married women of reproductive age are using a modern contraceptive method, while in Pakistan, the figure is only 20 percent. Around the middle of the 21st century, Pakistan will become the fourth most populous country in the world, after India, China, and the United States (UNPD, 2007).

In recent decades, Pakistan has been embroiled in high-stakes geopolitical relationships, both internally and externally. The divisions between Pakistan's government and Islamic extremists reached a full-fledged confrontation in the summer of 2007, when the country's military president, Pervez Musharraf, ordered an attack on a mosque held by fundamentalists in Islamabad, leading to the deaths of nearly 300 people. The situation continues to change rapidly, following the assassination of former Prime Minister Benazir Bhutto and the election of a fragile coalition government, and culminating in Musharraf's resignation in August 2008. Overall, political infighting has hindered economic progress—and distracted the government from fighting terrorists and other militants (Toosi, 2008).

The link between age structure and Pakistan's political and social institutions is visible in the growth of the *madrasa* educational system. As the country's school-age population doubled between 1975 and 2000 and placement in public schools became more competitive, many parents—particularly the poor—turned to religious schools, or *madrasas*, to educate their sons. With more than 1.5 million students in Pakistan, *madrasas* provide free room and board to children in need, but their educational outlook is often limited to a strict religious orthodoxy with little practical application for employment. Some *madrasas* have been linked to sponsoring militant activities in Afghanistan and the Kashmir province (International Crisis Group, 2002).

Iran

In the 1980s, during the prolonged war with Iraq, Iran's fertility rate was more than 6.5 children per woman, and the annual population growth rate surpassed four percent (UNPD, 2007). Concerned about the economic consequences of escalating demand for public services and jobs, in the 1990s government officials successfully convinced key clerics of the need

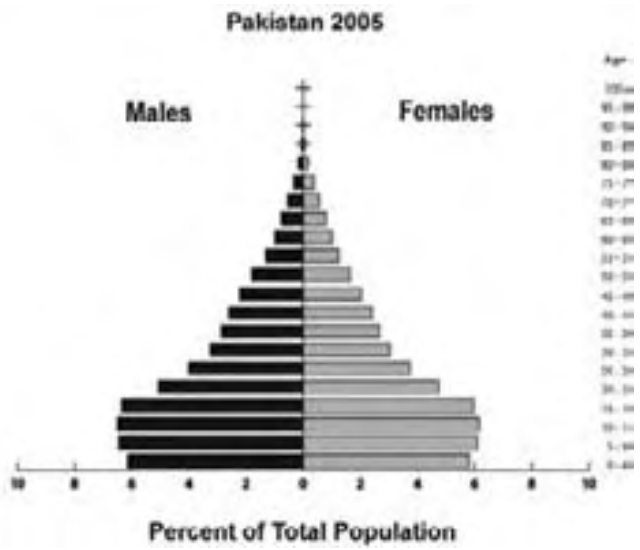
for a concerted and extensive national family planning program.

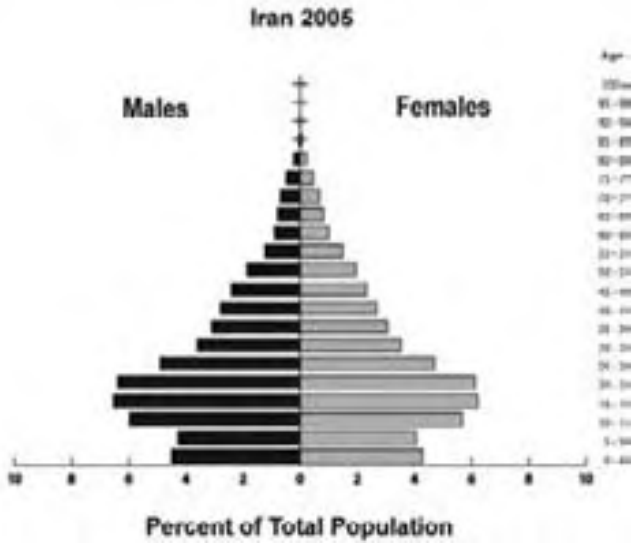
Although the program does not focus on the reproductive health needs of the young and unmarried, it provides free modern contraceptive methods at public clinics. Prospective spouses must attend a government-sponsored class on family planning in order to receive a marriage license (Roudi-Fahimi, 2002). Indeed, the program has been even more successful at encouraging smaller families than the government had anticipated. The national fertility rate dropped to the replacement level of 2.1 children per woman (UNPD, 2007). As recently as 1995, Iran still had a very young age structure, but it has now reached the later stages of the youthful age structure category. According to UNPD projections that show fertility rates continuing to decline, Iran will achieve a transitional age structure by 2010.

Interestingly, Iran has made this rapid demographic progress under an autocratic government and with only slow economic development. A lower-middle income country, Iran's economic growth rate has averaged a little more than three percent annually over the past decade, and inflation and unemployment remain high (World Bank, 2007). The political establishment, controlled by Supreme Leader Ayatollah Khamenei and other clerics, has resisted recent efforts toward political reform and openness, while President Mahmoud Ahmadinejad has escalated tensions on the international stage over the country's nuclear development program.

In October 2006, President Ahmadinejad issued a challenge to Iran's now well-established family planning program, calling for higher fertility rates in an aim to increase the country's population by 70 percent, to 120 million. He proposed achieving this drastic change by cutting back women's working hours to encourage them to have more than two children each.

Despite Ahmadinejad's efforts, analysts doubt that Iran will return to high levels of population growth (Cincotta, 2006). The national family planning program and the social and economic changes it has promoted—including higher rates of women's participation in the workforce—are well-entrenched within Iranian society. Iran's political and economic challenges are substantial, but the country seems well on its way to a more balanced age structure. Iran's history suggests that economic growth and democratic transformation are not prerequisites for a decline in fertility.





Policy Recommendations

Countries with very young and youthful age structures need interventions to encourage progress along the demographic transition,

REPORT ONLINE

The complete text of *The Shape of Things to Come: Why Age Structure Matters to a Safer, More Equitable World*, by Elizabeth Leahy and colleagues, is on Population Action International's website: http://www.populationaction.org/Publications/Reports/The_Shape_of_Things_to_Come/Summary.shtml

An earlier report from PAI, *The Security Demographic*, also focuses on age structure and security: http://www.populationaction.org/Publications/Reports/The_Security_Demographic/Summary.shtml

Leahy coauthored an article for *World Watch* magazine on "Population and Security" with ECSP's Sean Peoples: http://www.worldwatch.org/node/5853

When education, health care, and employment are available, young people renew and revitalize a country's economy and institutions. Unfortunately, these opportunities are not widespread in many countries that face a continually growing population.

which in some cases they have not even begun. Governments and civil society should collaborate on reproductive health programs, which must be long-term efforts with ongoing support from bilateral and multilateral donors.

Progress along the demographic transition is achieved through declines in mortality and fertility rates, which produce a more balanced age structure over time. These changes occur through access to basic health care, nutrition, and sanitation. The increased availability and use of modern contraceptive methods and higher levels of female educational attainment have both been shown to promote smaller family sizes (Bongaarts et al., 1990). Many countries—including Mexico, Thailand, and Tunisia—have successfully initiated a shift to smaller family sizes through state-supported voluntary family planning programs that provide free or affordable contraception, counseling, and related reproductive health care. In addition, countries in which most girls attend secondary school have lower fertility rates and better maternal and child health indicators (Abu-Ghaida & Klasen, 2004). This trend enables future generations of girls to be educated, and allows more women to join the labor force and increase their families' income.

Finally, policies and programs in countries at the beginning of the demographic transition must focus on the needs of and opportunities for young people. People sometime misinterpret the fact that countries with youthful populations have been more vulnerable to conflict and poor governance to mean that young people are, in and of themselves, a security threat. This assumption could not be further from the truth. In fact, young people are an asset for any society, and their well-being and success determine the future of a country's development. When education, health care, and employment are available, young people renew and revitalize a country's economy and institutions. Unfortunately, these opportunities are not widespread in many countries that face a continually growing population. Providing them must be a major priority of these countries' development programs.

Note

1. Countries with a very young age structure outside of sub-Saharan Africa include Afghanistan, Cambodia, Guatemala, Haiti, Honduras, Iraq, Laos, Nicaragua, the Palestinian Territories, Syria, and Yemen.

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Saira, 11, attends a free adult teaching class at Fatehjang Training Center in Fatehjang district, Pakistan. She cannot afford school as she is an orphan. (© 2006 Jacob Simkin, courtesy of Photoshare)

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SPECIAL REPORT

From Conflict to Peacebuilding: UNEP's Role in Environmental Assessment and Recovery

We dismounted from our donkeys near the ancient city of Herat in search of pistachio woodlands. Twenty-three years of war had completely decimated the forests, and our team of experts from the UN Environment Programme (UNEP) had traveled to northwest Afghanistan to determine how such massive deforestation was affecting the lives and livelihoods of local people.

After some initial chitchat about health, family, and Allah, I asked the local village commander, Daolat, if he could lead us to one of the last remaining stands of wild pistachio in the province. He countered by asking if he could first show me his hidden weapons cache, including the firing tube from a Stinger missile that he had used to destroy a Soviet helicopter gunship. I politely declined, since we had little time in the village, but never in my wildest dreams could I have imagined being in such a situation. However, in the years that followed, I was frequently struck by similar encounters with local people trying to cope with environmental damage and the many ways it affects their lives.

Since that trip to Afghanistan in 2002, I have investigated the environmental consequences of conflict in countries including Iraq, Lebanon, Liberia, Somalia, Sudan, and the Democratic Republic of the Congo (DRC) on behalf of UNEP. Using state-of-the-art science and technology, teams of UN environmental experts identify direct and indirect environmental damage and assess its impact on human health, livelihoods, and security in conflict-affected countries. Our goal is to collect scientific data about

DAVID JENSEN

David Jensen heads the Policy and Planning Team of the UN Environment Programme's Post-Conflict and Disaster Management Branch in Geneva, Switzerland. Since 2000, he has worked on 10 post-conflict operations either as a technical expert or as a project coordinator. Jensen is now leading UNEP's efforts to provide technical expertise on environment, conflict, and peacebuilding to the Peacebuilding Commission and the UN Development Group. He holds a bachelor's degree from the University of Victoria and a master's degree from the University of Oxford. (Photo courtesy UNEP)

the environment and present it in ways that speak to the daily concerns of local people, policymakers, and the international community.

If people cannot find clean water for drinking, wood for shelter and energy, or land for crops, what are the chances that peace will be successful and durable? Very slim. UNEP seeks to ensure that countries rebuilding from conflict identify the sustainable use of natural resources as a fundamental prerequisite and guiding principle of their reconstruction and recovery.

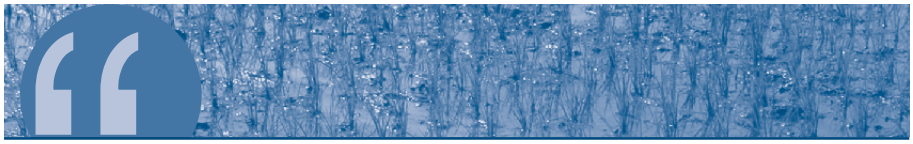
Since these specialized field operations began in 1999, UNEP has learned three critical lessons:

1. Although the types and magnitude differ, conflicts always cause environmental damage, in three primary ways: directly from military activities, such as bombing; indirectly from the coping strategies of local people; and indirectly from the breakdown of institutional infrastructure, which often accompanies conflicts. Conflict-related environmental damage affects people in three ways: It threatens health; it threatens livelihoods; and it threatens human security.

2. Relief and recovery activities often rely on natural resources, causing additional damage to the environment and potentially producing new sources of risk. Yet the recovery process itself can be harnessed to help re-orient conflict-affected countries to more sustainable forms of development.

3. Natural resources and the environment are not only damaged by conflict, they also drive and sustain it. Since 1990, 17 conflicts have been fueled by natural resources, including nine in Africa alone (UNEP, 2008a).

Using case studies, this article explores each of these lessons and presents UNEP's plans and priorities for expanding operations in post-conflict environmental assessment and recovery.



UNEP seeks to ensure that countries rebuilding from conflict identify the sustainable use of natural resources as a fundamental prerequisite and guiding principle of their reconstruction and recovery.

The Birth of UNEP's Post-Conflict Environmental Operations: The Kosovo Conflict

UNEP's post-conflict operations began in Kosovo in 1999. Most readers will recall the streams of refugees fleeing Kosovo—750,000 in total—but some might also remember the bombing of roads, public infrastructure, and industrial sites that NATO called "strategic targets." For example, the Pancevo chemical complex was hit 12 separate times during the conflict, releasing 80,000 tons of burning oil into the environment (UNEP & UN-HABITAT, 1999). Black rain fell onto neighboring towns and villages. In addition, a toxic soup of compounds and substances leaked into the air, soil, and water around Pancevo—which was only one of the more than 50 industrial sites that were hit (UNEP & UN-HABITAT, 1999).

The local communities across Serbia and the region demanded to know what was happening to their environment. Bulgaria and Romania expressed their deep concern about transboundary air pollution and the potentially toxic sludge in the Danube River. Meanwhile, NATO argued that they had minimized environmental damage by using sophisticated weapons and selective targeting.

In response to the demand for accurate and objective information, UN Secretary-General

Mazar-e-Sharif seen from the air (Courtesy UNEP)

Kofi Annan requested UNEP take action. We sent teams of environmental experts to assess the environmental impacts and risks to human health using field samples, mobile labs, and satellite images. UNEP's first report concluded that the damage was not as serious as people first thought (UNEP & UN-HABITAT, 1999). High concentrations of chemicals were identified at four main hotspots, but the overall situation was not a catastrophe. These hotspots, however, required restoration to protect human health and the environment from further risks, and clean-up efforts were considered an urgent humanitarian priority.

The situation in Kosovo—a short-duration war that used sophisticated weapons in highly industrialized locations—proved to be a good test of UNEP's analytical techniques and ability to deploy multidisciplinary teams of experts to the field. However, this approach to post-conflict assessments—focusing on environmental contamination from bombed industrial sites—was fundamentally altered by our next major assessment.

Linking Natural Resources, Livelihoods, and Peacebuilding: Afghanistan

In 2002, the transitional government of Afghanistan asked UNEP to carry out a comprehensive environmental assessment. However, since the country had virtually no heavy infrastructure, we needed a new approach to gauge the impact of 23 years of conflict on the environment. UNEP launched five parallel teams of experts to assess how natural resources—including land, water, forests, and wildlife—were affected by coping strategies used by local communities during the conflict. We also evaluated the state of water and waste infrastructure, as well as air quality, in five of the main cities. Our aim was to assess potential environmental risks caused by the combined effects of urban growth, migration, and an overall lack of investment and maintenance.

In some areas, we found that up to 95 percent of the landscape had been deforested during the conflict—cut for fuel, bombed to

Air sampling along the main street in Kandahar (Courtesy UNEP)

remove cover, or removed to grow crops and graze livestock (UNEP, 2003). Many people were fundamentally dependent on these forests for livelihoods. Without them, and without alternatives, Afghans were migrating to the cities or engaging in other forms of income generation—such as poppy production for the drug trade—in order to survive.

Afghanistan taught us something important about the impact of conflict: Coping strategies used by local people, coupled with the breakdown of governance, can cause more environmental damage than the war itself. For more than two decades, Afghanistan's natural resources were liquidated and mismanaged, leading to widespread and profound environmental impacts on forests, aquifers, land, and wildlife. As the rebuilding process unfolded, restoring these resources became a major government priority in order to restore livelihoods, reduce migration, and promote economic stability—the basic prerequisites for lasting peace.

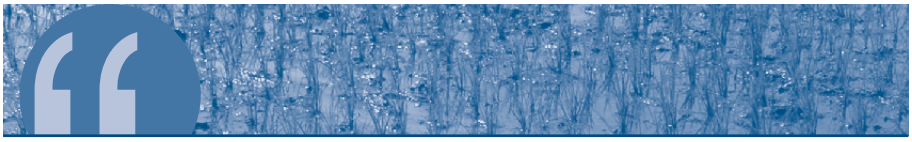
Afghanistan's experience demonstrates that while degraded natural resources can undermine livelihoods and threaten stability, restoring them can also contribute to peace. Large-scale environmental recovery projects can provide immediate employment opportunities and support new livelihoods, especially for vulnerable sectors of the population such as former combatants.

Building on the recommendations contained in the post-conflict environmental assessment, UNEP is helping the Afghan government develop its environmental institutions. UNEP has established a program office within the compound of the National Environmental Protection Agency (NEPA) and is helping to build its capacity with a seven-year program from 2003 to 2010—the largest of its kind for UNEP.

UNEP's Latest Post-Conflict Environmental Assessments: Lebanon and Sudan

During the 34-day conflict between Lebanon and Israel in 2006, UNEP tracked environmental impacts on both sides of the Lebanon-Israel border. Within 24 hours of the ceasefire agreement, an expert from the Joint UNEP-OCHA

For more than two decades, Afghanistan's natural resources were liquidated and mismanaged, leading to widespread and profound environmental impacts on forests, aquifers, land, and wildlife.



Any future peace in Darfur must find ways to address the critical gap between pastoralists' and farmers' demands for fertile land and water resources and the limited supply.

Environment Unit was on the ground to assess acute environmental risks to human health. The major concern was the potential environmental damage and health risks from the bombing of fuel storage tanks at the Jiyeh thermal power plant, which spilled some 10,000-15,000 tons of heavy fuel oil into the sea, affecting approximately 150 km of Lebanese coastline, as well as part of Syria's coast (UNEP, 2007a). The Joint Unit worked closely with the Ministry of Environment and international actors to establish an Oil Spill Operations and Coordination Centre, which coordinated equipment, monetary contributions, and staff in the spill's aftermath. The Joint Unit also monitored public sources to gather information on other environmental impacts of the conflict.

To conduct a wider assessment of the environmental damage and associated risks, UNEP assembled a team of 12 scientists with expertise in solid and hazardous waste management, freshwater resources, land-based contamination, marine and coastal management, and military weaponry. The UNEP team visited more than 100 sites throughout the country and took close to 200 samples of soil, surface and groundwater, dust, ash, seawater, sediment, and marine animals. Fifteen Ministry of Environment staff members and volunteers, as well as a scientist from the Lebanese Atomic Energy Commission, accompanied the assessment team in the field.

The final assessment report concluded that the oil pollution to the marine environment was largely contained by the rapid response, as contamination levels appeared to be typical for coastal areas in that part of the Mediterranean—good news for the country's economically important tourism and fisheries sectors (UNEP, 2007a). The report also verified that none of the weapons used in the conflict were made from depleted uranium or any other radioactive material. The major environmental risks generated by the conflict were related to the disposal of debris and hazardous waste generated by the destruction of industrial sites and the demolition of buildings. The sheer scale of the debris overwhelmed municipal dump sites and waste management systems, potentially contaminating groundwater and air. UNEP made recommendations for addressing these risks and prepared to provide further technical assistance, if requested.

In contrast, the assessment in Sudan was the largest and most complex ever undertaken by UNEP, requiring 10 separate field missions over 12 months, more than 12,000 km of road travel, and more than 2,000 interviews. The final assessment report, released in June 2007, is the most comprehensive that UNEP has ever produced, covering water, agriculture, forests, desertification, natural disasters, wildlife, the marine environment, industrial pollution, the urban environment, environmental governance, and the role of environmental pressures in Sudan's conflicts. The report offers 85 recommendations and outlines a detailed government action plan with a total estimated national cost of $120 million over 3-5 years (UNEP, 2007b)

One of the report's most critical findings is that scarce natural resources such as land and water are inextricably linked to the conflict in Darfur. Any future peace in Darfur must find ways to address the critical gap between pastoralists' and farmers' demands for fertile land and water resources and the limited supply. However, just as environmental stress can help trigger and perpetuate conflict, the sustainable management of natural resources can provide the basis for long-term stability, sustainable livelihoods, and development, the report concluded.

The Sahel, which extends from Senegal eastward to Sudan, forms a narrow transitional band between the arid Sahara to the north and the humid savannah to the south. In its natural state, the Sahel belt is characterized by baobab and acacia trees, and sparse grass cover. Since the late 20th century, it has been subjected to desertification and soil erosion caused by natural climate change, as well as overgrazing and farming. The countries of the Sahel zone also suffered devastating droughts and famine in the early 1970s, and again in the 1980s. Apart from long-term droughts, the Sahel is prone to highly variable rainfall, with associated problems for livestock- and crop-rearing. (Courtesy UNEP)

Building on the post-conflict environmental assessment, UNEP has developed a Sudan program with a pipeline of projects, including building capacity for the environmental ministries in Khartoum and Juba, and implementing field-based projects in Darfur that promote reforestation and alternatives to timber use for energy and construction. The program is also conducting technical assessments of water resources and seeking to improve governance and sustainable management of groundwater. UNEP will also engage the international community in Sudan to develop environmental and natural resource management as a critical component of conflict resolution, recovery, and development.

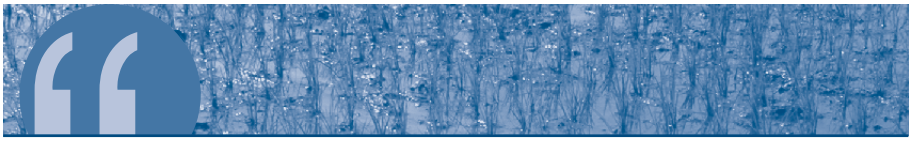
Post-Conflict Assessments in Progress: Rwanda and the Democratic Republic of the Congo

In the eastern DRC, high-value natural resources are fueling conflict and prolonging instability. Various militias fight with each other, local communities, and the government for control of minerals and timber. The resources themselves fund arms and armies, thus threatening peace. The immediate management of these resources is fundamental to building peace and stability. UNEP is launching a comprehensive assessment in the DRC, seeking to determine how the country's great natural resource wealth can be used in sustainable ways and contribute to—rather than hinder—the peacebulding process.

In neighboring Rwanda, UNEP and the Government of Rwanda will embark on a major study to identify the post-conflict environmental challenges facing the country. The partners will develop a forward-looking action plan outlining priorities and costs for the next three to five years.

The Environmental Impact of Relief and Recovery

Relief and recovery operations themselves can have an environmental impact. In the DRC, for example, recent fighting in northern Kivu displaced around 60,000 people into five camps near the border of Virunga National Park. Virunga is one of the last two places on Earth where mountain gorillas still live in the wild. While relief agencies provided food,



Environmental needs must be considered in the humanitarian phase; if we wait until recovery starts, it is already too late.

water, and shelter to the displaced, they failed to provide energy for cooking. As a result, camp inhabitants were left with no choice but to collect wood from the park itself. While conservation needs may be less of a priority than human survival, these impacts could have been easily avoided by supplying the camp with energy-efficient stoves and sustainably produced wood from woodlots.

In Darfur, UNEP's post-conflict assessment noted that some groundwater aquifers were being pumped above sustainable levels to meet urgent humanitarian needs. While this may be a short-term solution, the medium-term implications for local communities that rely on the groundwater are grave. The loss of those aquifers could lead to another crisis or potential conflict. One of the key humanitarian principles, "do no harm," should apply equally to the environment; therefore, monitoring the extraction and recharge rates should be a basic prerequisite for all groundwater pumping.

The recovery process faces similar challenges. The post-conflict period witnesses a massive injection of capital and a flurry of rebuilding activity. About 6-20 times more aid per capita is received following a disaster or conflict than during "normal" times. As a result, natural resources normally consumed over a 5-10 year period are consumed in a year in frenzy of post-crisis "hyper-development." While it is not yet fully quantified, I believe that more environmental damage actually happens during the reconstruction process than in the conflict or disaster itself. In the rush to rebuild infrastructure and restore economies, there is little time for planning, environmental safeguards, or wise decisions on the sustainable use of resources. Political pressure dictates immediate and visible progress.

As a result, environmental needs must be considered in the humanitarian phase; if we wait until recovery starts, it is already too late. The Post-Conflict Needs Assessment and Post-Disaster Needs Assessment are critical UN tools for defining early recovery needs, including environmental issues, from the outset of a crisis. Ideally, these tools will help countries build back better, reduce underlying vulnerabilities, and move them toward more sustainable forms of development. UNEP is working with a number of partners to ensure these tools are systematically applied in post-crisis situations.

Priorities, Partners, and Plans for UNEP in Addressing Environment and Conflict

UNEP is going through an exhaustive—and overdue—internal reform process. These reforms will focus our work on six core areas (see box), instill a results-based management approach, and strategically strengthen UNEP's presence in countries with major environmental challenges. UNEP is now working with member states and other stakeholders to define priorities, identify partners, and explore options for expanding its work in assessing and addressing the environmental causes and consequences of conflicts and disasters, which is one of the six core areas. In my personal vision, UNEP could consider expanding operations in the following five ways:

Create viable early warning systems: First, UNEP should begin with prevention and risk reduction. We need to start identifying, on a more systematic basis, countries that are vulnerable to conflicts and disasters due to poor natural resource management—particularly fragile states where we can strengthen natural resource man-

agement capacity and crisis preparedness. We also need to understand which regions will be most affected by climate change and how it will amplify conflict and disaster vulnerability.

Further develop early response capabilities: Second, if a conflict or disaster does occur, UNEP should conduct its assessment in two phases. In the first phase, UNEP and the UN Office for Coordination of Humanitarian Affairs will conduct a rapid environmental assessment of critical threats to human life and health from the release of hazardous substances. To do this, UNEP will need to systematically deploy environmental experts on UN Disaster Assessment and Coordination teams with clear mechanisms in place to provide emergency clean-up assistance. In the second phase, UNEP will perform more detailed environmental assessments integrated within the UN needs assessment process, which looks at environmental damage and risks to heath, livelihoods, and security. The assessments should also look ahead at rebuilding better, as well as look to the past to understand the root causes of the event.

Build national and local capacity for environmental governance: Third, where key environmental risks are identified, UNEP should be available to establish an in-country recovery program to help national environmental authorities with clean-up and rehabilitation, as we have done in Afghanistan, Iraq, Liberia, Sri Lanka, and Sudan. UNEP has played a key role in assessing their capacity, strengthening their hand, and providing technical and political support in the weeks, months, and years following a crisis. Many member states are asking UNEP to expand this kind of service.

Disseminate environmental technical expertise and assistance: Fourth, UNEP should ensure that environmental technical assistance is available to government and UN agencies struggling with environmental issues in post-crisis settings. We need to be able to identify the specific environmental technologies that can be used, the key risks to be considered, and the best practices to follow. To do this, UNEP would need to maintain a trained roster of experts and deploy specialists on an as-needed basis.

UNEP's Medium-Term Strategy for 2010–2013 proposes that the organization focus on six core priority areas (UNEP, 2008b):

- Climate change
- Disasters and conflicts
- Ecosystem management
- Environmental governance
- Harmful substances and hazardous waste
- Resource efficiency and sustainable consumption and production

Capitalize on the linkages between environment, peacebuilding and conflict prevention: Finally, UNEP should build greater capacity to help conflict-affected countries use natural resources as platforms for peacebuilding through dialogue, confidence building, and cooperation. In the European region, UNEP has led the Environmental Security Initiative, which has used common environmental threats as opportunities for transboundary collaboration and cooperation. Now is the time to scale up such services to the global level, starting with countries in Africa most affected by conflict.

To implement this vision, UNEP will need political, technical, governmental, and financial partners. Some of these partnerships are already being forged. For example, one of our senior staff members is providing guidance on natural resources and environmental manage-

REPORT ONLINE

All of UNEP's reports on disasters and conflicts, including the assessments of Kosovo, Afghanistan, Lebanon, and Sudan, are available online: http://postconflict.unep.ch/publications

The Sudan Environmental Database includes the data collected by UNEP experts in the field, as well as hundreds of photos, maps and satellite images, field video, bibliographic information, and technical studies: http://www.unep.org/sudan/

Scarred Lands and Wounded Lives: The Environmental Footprint of War, a documentary by Alice and Lincoln Day featuring an interview with David Jensen, was released in April 2008 at the Environmental Film Festival in the Nation's Capital: http://www.fundforsustainabletomorrows.org/film.htm

ment in post-conflict countries to the support office of the UN Peacebuilding Commission. Other partners—including the Earth Institute, Global Witness, the Environmental Law Institute, Adelphi Research, the Woodrow Wilson Center, and the International Institute for Sustainable Development—are helping us analyze case studies, develop tools, conduct field missions, and recommend how the UN system can help prevent resource-based conflicts and use the environment as a platform for dialogue, cooperation, and confidence building.

The need for this work is amplified by the potential implications of climate change, which is expected to change the distribution of critical resources such as water and fertile land—potentially leading to new sources of conflict. While the task may seem overwhelming at times, I take inspiration from the Afghan saying, "If you want to go fast, go alone; if you want to go far, go together." We welcome the best and brightest minds from around the world to join us on this journey.

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SPECIAL REPORT

An Ethical Approach to Population and Climate Change

Climate change has finally grabbed the attention of the U.S. public and policymakers, yet the role of population has been all but overlooked until very recently. Today, interest in the relationship between global population growth and climate change is growing, as demonstrated by a spate of recent articles (e.g., Lahart et al., 2008). Many population experts see the world's focus on climate change as an opportunity to make population relevant again (e.g., PHE Policy and Practice Group, 2008; Smith, 2008). By getting governments and donors to recognize that climate change might be partly alleviated by addressing population growth, they believe they can help secure long-promised and sorely needed funding for international family planning.

For both practical and ethical reasons, we must think very carefully before developing advocacy arguments linking global population growth and climate change. Politically, an overstated argument could invite disaster by triggering backlashes from all sides of the issue, setting international family planning back decades. Ethically, we must be exceedingly conscious of what we are asking, and why, before we hitch a ride on the climate change train. Only by framing the connections between population and climate change in their full context can we move forward in an ethical and helpful manner. Done well, a thoughtful and deliberative dialogue around voluntary family planning's contribution to mitigating climate change can help us better understand the significant role the United States plays in the world, not only as a consumer and polluter, but also as an important member of a global commons, and as a beneficent donor.

A Brief History of Population

From Thomas Malthus in the 1790s to Paul Ehrlich and Garrett Hardin in the 1960s, demographers and ecologists have raised con-

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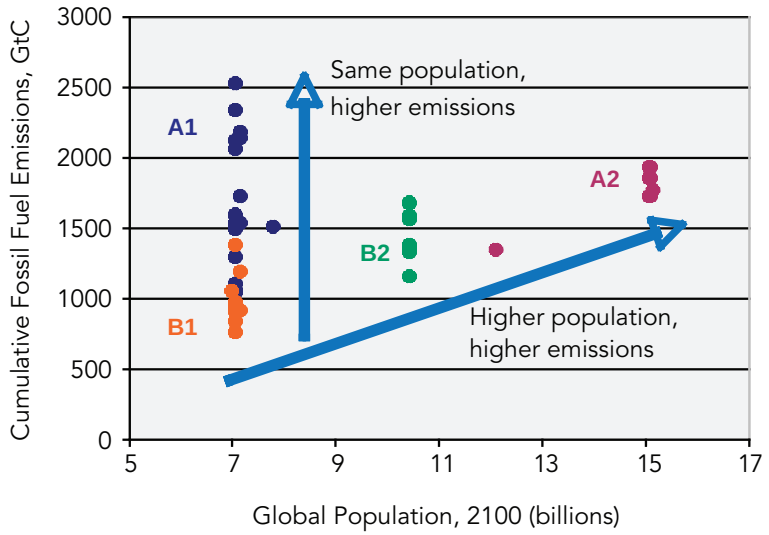
SUZANNE PETRONI

Figure 1: Population-Emissions Relationship



Note: The X-axis marks the global population size in 2100 for each of the IPCC scenarios (A1, A2, B1, and B2), while the Y axis measures the cumulative emissions of carbon from 2000-2100, which are dependent on scenarios' economic and technological assumptions. In general, a higher population is associated with higher emissions, but lower population will not guarantee a low emissions outcome on its own.

Source: O'Neill (2008).

cerns about the planet's ability to sustain exponentially increasing human populations. These arguments helped place population and family planning on the U.S. development agenda. Today, however, Malthusian alarmism has, for the most part, been left behind. Despite the massive growth of the world's population since 1798 (and since the 1960s, for that matter), technology and human innovation have kept famines and food shortages from causing the devastation and mass starvation that Malthus and Ehrlich presaged.

For years, many of the programs supported by the United States and others around the world were geared toward achieving specific demographic targets, often using heavy-handed, top-down schemes to reduce fertility. The 1994 International Conference on Population and Development (ICPD) was a significant crossroads for the population field, turning the focus of population programs away from demographic targets and incentives and toward voluntarism and individual rights, while also launching a more comprehensive approach to reproductive health and women's empowerment.

Feminists and human rights activists played a key role in forging a consensus with environmentalists at the ICPD, agreeing that individuals and couples who had the information and means with which to plan their families would likely choose to have smaller ones, thereby leading, from the bottom up, to more sustainable development. Donor countries agreed to provide increasing levels of funding through international development assistance for the ICPD agenda. But today, while U.S. assistance for family planning remains the highest in the world, U.S. funding has declined significantly in real terms over the past decade (Population Action International, 2007).

Since 1994, advocates for increased funding have used many arguments and tried many ways to get the United States to meet its commitments, to no avail. And so here comes climate change—yet another avenue for advocacy and perhaps, some hope, the grand solution to the funding challenge. If only policymakers accept the argument that climate change cannot be resolved without stemming global population growth, government funding for international family assistance will be secured.

Unfortunately, it's not that simple.

How Population Affects Climate Change

Climate change is primarily driven by three factors (Davidson et al., 2007):

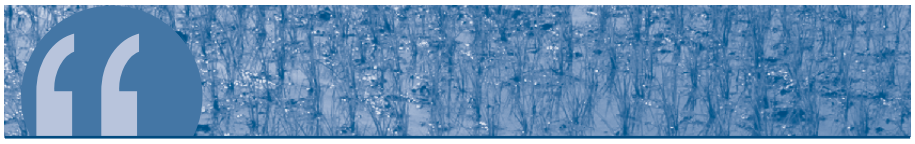
- Greenhouse-gas emissions;

- Economic growth that fuels energy consumption; and
- Population growth that fosters increased greenhouse gas-emitting activities.

As population size has increased over the past decades, so, too, have emissions, both in the United States and globally (O'Neill, 2008). But while the trend lines run in parallel, the connection is far from unequivocal; in fact, there is a great deal of uncertainty about the precise impacts of population size and dynamics on climate change.

The Intergovernmental Panel on Climate Change's (IPCC) future scenarios vary greatly depending on a number of factors, including population dynamics. For example, if high consumption and emissions continue, the world will likely face significant climate change, even if population grows at a low rate. Alternatively, significant technological advances, such as renewable energy development or carbon sequestration, could coincide with rapid population growth to produce a relatively healthy climate (see Figure 1).

The "stabilization wedge" concept puts forward a range of some 15 interventions or "wedges," seven or eight of which could work together to prevent the doubling of emissions by 2050 (Pacala & Socolow, 2004). Most of these wedges require changing patterns of production and consumption—the vast bulk of which are driven by the industrialized world.[1] Speaking at the Woodrow Wilson Center in March 2008, IPCC author Brian O'Neill hypothesized that slowing population growth might potentially act as one wedge. But despite the likelihood that slowing population growth would have a somewhat limited impact on climate change, he argued the topic should be on the table, saying, "We need all the wedges we can get, and some wedges are harder than others to do. And if this is a wedge that also has lots of individual-level benefits, is a kind of win-win policy for other reasons, then it maybe should be one of the ones that's done first. But it's not going to solve the problem on its own" (O'Neill, 2008).



Future population growth in the United States will have a hugely disproportionate impact on greenhouse gas emissions compared to the rest of the world.

Some Ethical Concerns

Ethicist Ralph Potter wrote about U.S. population policy in 1971 that "alliances are formed by those who converge at any given moment in support of particular policies" (Institute of Society Ethics and the Life Sciences, 1971). Those hoping to place population back on the policy agenda through the climate change discussion are attempting to create an alliance in support of increasing family planning assistance to developing countries. But is this effort ethical?

While consumption is clearly the primary driver of environmental degradation, including climate change, it appears evident that population growth is a contributing factor to some degree. And if population growth is proven to be destructive to public health and the natural environment, then governments have an obligation to intervene to lessen this damage.

But we must first recognize that, unlike climate change, population growth is not a consistently global phenomenon. Nearly all of the world's future population growth is expected to take place in developing countries, which currently produce the least amount of greenhouse gases, but whose contribution is expected to increase as their economies develop (Bongaarts & Bulatao, 2000). Ethically, those of us in the developed world cannot ask the people of these countries, many of whom struggle to subsist on a dollar or two a day, to slow their economic development

While the growing Indian population's demand for energy is predicted to double its total CO_2 emissions by 2030, the average U.S. citizen is estimated to be responsible for 13 times as much CO_2 as the average Indian. (Courtesy flickr user Daveybot; http://www.flickr.com/photos/davemorris/365961797/)

for the sake of improving the global climate. So is it appropriate to ask them to slow their population growth to achieve the same end?

Consider this: The United States contains four percent of the world's population, but produces 21 percent of its greenhouse gases (EIA, 2007). Cumulatively, residents of the United States have been the world's greatest source of greenhouse gases for the past decade, and will continue to contribute one of the world's largest shares, unless consumption patterns change radically. While some worry about the effects of the growth of countries like China, India, Nigeria, Pakistan, Indonesia, and Bangladesh on the environment, few mention the U.S. population, which grew some 50 percent over the past 50 years, and is expected to increase by another 140 million people by the year 2050 (Passel & Cohn, 2008). While this is far fewer people than India expects to add, it is roughly the same as Nigeria's projected increase, slightly more than Pakistan's, and more than twice as many new people as in Bangladesh or Indonesia (Population Reference Bureau, 2008).

In 2005, the average U.S. citizen was responsible for an estimated 20 metric tons of CO_2—some 20-30 times the emissions of the average Indian, Nigerian, or Guatemalan, and 73 times that of the average Bangladeshi (EIA, 2007; see Figure 2). I would argue that it is therefore not appropriate for those in the United States to speak of reducing fertility rates in Nigeria or Bangladesh for environmental purposes without first mentioning the growth of their own population, whose impact on the environment is immensely more significant.[2] While continued economic growth in countries like India, China, and Brazil might drive their total CO_2 emissions higher—according to some estimates, China has already surpassed the United States—it is highly unlikely that they will approach U.S. per capita consumption levels in the near term (see Figure 3).

An Ethical Solution?

The issue of population growth is beginning to find its way onto the climate change table, and—just as some promote single technological solutions as quick fixes—family planning may be proposed by those seeking simple answers to an incredibly complex challenge. Consequently, it seems that those of us working on population issues must enter the climate change discussion, but we must do so with great care.

To be both credible and ethically grounded, arguments must follow two essential guidelines. First, we should not overstate the impact that slowing global population growth will have on climate change, but instead acknowledge that it would likely play only a limited role. The larger and considerably more significant solution lies in addressing the unsustainable patterns of production and consumption that continue to be the main drivers of climate change. These patterns must therefore dominate our discussions and our priorities as we determine and employ appropriate actions to mitigate climate change.

Second, we should affirm that population growth is not a uniformly "global" phenomenon, particularly in regard to climate change.

Specifically, future population growth in the United States will have a hugely disproportionate impact on greenhouse gas emissions compared to the rest of the world. To be credible voices for slowing population growth as a means of mitigating climate change, U.S. advocates must address the challenge of their own country's growth before calling for slower growth in developing countries.

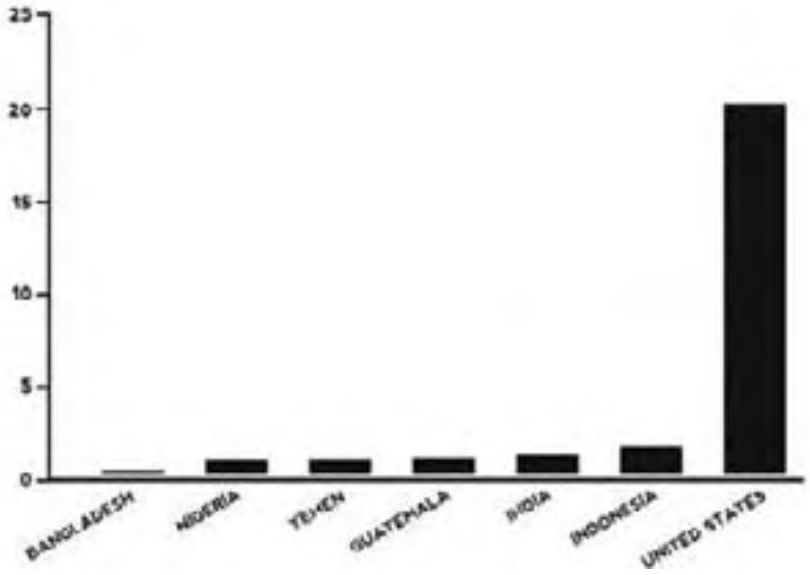
Only after laying this foundation should we turn to the importance of investing in family planning specifically as an environmental issue. And if we begin with the individual, we will be on quite solid ethical ground. Indeed, the ICPD approach (and the evidence) provides an excellent basis for this position.

Currently, more than 100 million women around the world want—but do not have access to—modern methods of family planning (Sedgh, 2007). The high numbers of unintended pregnancies each year, including more than three million in the United States alone, attest to this tremendous unmet need (Trussell & Wynn, 2008). Helping address this need is not only the right thing to do, it is also a commitment the United States made at the ICPD in 1994.

The past four decades have shown that, given adequate information and access to services, couples will tend to choose to have fewer children, thereby enabling better health and economic outcomes for their families (Schultz, 2005; Behrman & Knowles, 1998). These choices will in turn contribute to slower population growth and, subsequently, to fewer negative impacts on the environment.

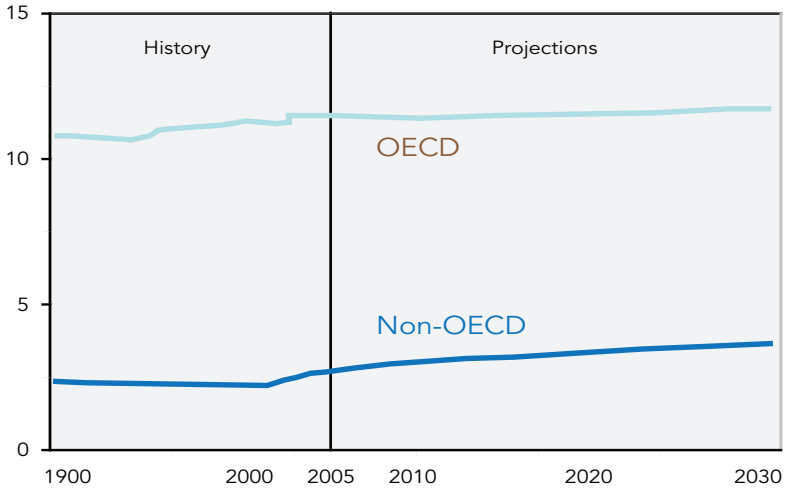
As the ICPD advises, family planning programs should not take place in isolation from other social programs. Efforts to improve health, advance gender equity, and expand educational and economic opportunities should be pursued in their own right, as well as in coordination with family planning efforts. Programs that integrate reproductive health services with efforts to improve livelihoods, for example, have demonstrated greater health and environmental benefits than single-sector programs (e.g.,

Figure 2: Carbon Dioxide Emissions Per Capita, Selected Countries (metric tons)

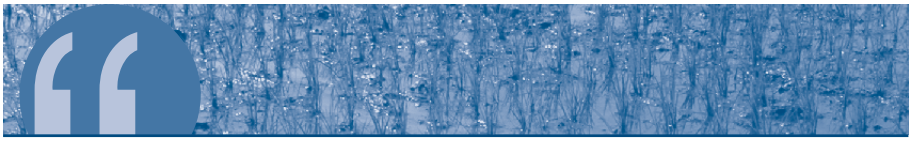


Source: EIA (2007). Chart by Storme Gray.

Figure 3: World Carbon Dioxide Emissions Per Capita, 1990-2030 (metric tons)



Source: EIA (2007; 2008).



A thoughtful and deliberative dialogue around voluntary family planning's contribution to mitigating climate change can help us better understand the significant role the United States plays in the world.

Castro & D'Agnes, 2008), and together, they all make a positive contribution to sustainable development (see brief on page 64).

Perhaps most critically, family planning policies must prioritize freedom and justice, and they must be implemented with individual rights at their core, for in the end, it is individuals—not abstract millions—who share our planet. Individuals must have the freedom to decide the number and timing of their children, which, we must recognize, includes the freedom to decide to have large numbers of children.

Investing in meeting the unmet need for family planning, the education of girls, the empowerment of women, the promotion of public health, the conservation of natural resources, and in other socio-economic programs aimed at improving the quality of life of individuals and families around the world will contribute to the outcome that we all seek: healthy individuals living on a healthy planet for generations to come.

These policies cannot be supported solely by developing countries themselves; they require the commitment of the global community. The United States and other developed countries must understand their obligation to help others achieve at least a reasonable minimum quality of life. In meeting this duty, not only will they contribute to improving the health and well-being of millions of women and children around the world, but they will also indirectly reduce the impacts of population growth on the environment.

Let us not exploit a global threat to our survival to further a cause that should rightly stand on its own. Instead, let us think critically and act ethically to ensure the well-being of the planet and its inhabitants, both present and future. A careful discussion of the ways in which voluntary family planning can further individual rights, community development, and, to some extent, climate change mitigation, could increase awareness not only of the outsized contribution of developed nations to global emissions, but also of their appropriate role in the global community. If embarking upon such a discussion leads to renewed support and funding for family planning assistance, it will achieve a great deal of good.

Notes

1. Brian O'Neill (2008) cited ending deforestation, improving vehicle efficiency, and switching coal plants to natural gas as examples of other wedges.

2. I would argue that most family planning advocates are largely unprepared to engage in the inevitable (and often anti-immigrant) discussions about immigration raised by the question of U.S. population growth.

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A chart by Population Action International illustrates that while the level of U.S. funding for population assistance has varied since the 1970s, when adjusted for inflation, it has remained stagnant: http://www.populationaction.org/Issues/U.S._Policies_and_Funding/Trends_in_U.S._Population_Assistance.shtml

The Guttmacher Institute provides current estimates and in-depth analyses of women's unmet need for contraception, including the reasons why women who do not wish to become pregnant do not use contraceptives: http://www.guttmacher.org/pubs/2007/07/09/or37.pdf

In *U.S. Population, Energy and Climate Change*, the Center for Environment & Population explores how various aspects of U.S. population—including size and growth rate, density, per capita resource use, and composition—affect greenhouse gas emissions: http://www.cepnet.org/documents/opulationEnergyandClimateChangeReportCEP.pdf

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Population and Climate Change: Enhancing Community Resilience and Adaptive Capacity

A growing number of projects around the world are integrating population programs with traditional conservation and other natural resource management activities. These comprehensive community-based efforts are strengthening resilience, adaptation, and reducing vulnerability to the effects of climate change by:

- Slowing the growth of population pressure on overtaxed and climate-stressed natural resources and biodiversity;
- Enabling community stewardship and sustainable use of forests, soils, watersheds, coastal areas, and other climate-sensitive resources; and,
- Building local awareness of the connections between environmental conditions, human health, and behavior; as well as the capacity to plan and manage resources in the context of these connections at the local level.

A community-based distribution agent offers family planning services at her convenience shop on Culion Island, Philippines. (Courtesy PFPI).

Building Resilience Among Coastal Communities: The Philippines Example

Coastal resources and the people that depend on them are increasingly at risk in the Philippines: Between 1966 and 1986, the productivity of coral reefs off the coasts of the Philippines dropped by one-third as the national population doubled. In response to these challenges, PATH Foundation Philippines, Inc. (PFPI) established the Integrated Population and Coastal Resource Management (IPOPCORM) Initiative in communities in two Philippine provinces.

IPOPCORM seeks to improve food security and overall quality of life in communities that depend on aquatic resources. Its community-based approach includes:

- Education and outreach on population, environment, and food security relationships;
- Environmentally friendly livelihood development;
- Reproductive health service delivery; and,
- Community-based efforts to restore coastal resources, including mangrove reforestation and coral reef protection.

By collaborating with local government and NGO partnerships, IPOPCORM is improving reproductive health outcomes, enhancing community-based management of coastal and marine resources, and building capacity for a more sustainable future in which coastal communities will be better able to adapt to the impacts of climate change.

Source: Excerpt from "Human Population Growth and Greenhouse Gas Emissions," by the Population-Health-Environment Policy and Practice Group (2008). See also "Fishing for Families: Reproductive Health and Integrated Coastal Management in the Philippines," by Joan Castro and Leona D'Agnes (2008).

Navigating Peace Initiative

Water Conflict and Cooperation: Looking Over the Horizon

The reality of water's roles in conflict and cooperation is more complex than the political rhetoric of "water wars" often implies. While the potential for violent and social conflict over water is clear, the level of this conflict is not so clear-cut. Exhaustive research by Aaron Wolf of Oregon State University has firmly established that international violent conflict is rarely—if ever—caused by, or focused on, water resources. Historically, formal and informal international political institutions managing water have adapted to increased scarcity without resorting to the expensive and inefficient means of war to secure water supplies. Instead, nations cooperate to manage their shared water resources (although equity and power differences mean all cooperation is not the same).

This history does not, however, close the door on the possibility of water wars. By 2050, as many as 7 billion people—more than currently alive in the world today—may live under conditions of water scarcity and stress. A large body of scholarly research suggests that environmental degradation may catalyze violent conflict *within* states, so the future may not resemble the past.

However, little systematic research examines an important corollary: that environmental cooperation may be a useful catalyst for regional peacemaking. The unique qualities of water could provide the cornerstone for efforts to build confidence and peace in regions with unsettled interstate relations. Shared water resources could offer avenues for trust building that can in turn support predictable and more enmeshed relations among potential adversaries.

The Navigating Peace Initiative's Water Conflict and Cooperation Working Group commissioned four policy briefs to identify the current and emerging trends in water conflict and cooperation. With the generous support of the Carnegie Corporation of New York, and led by ECSP Director Geoff Dabelko, the working group sought to:

- Understand the current mix of conflict and cooperation over water along wider continua of conflict and at more levels of analysis than have customarily been considered;
- Anticipate future possibilities for violent water conflict given the negative indicators in many areas of water management; and
- Formulate proactive steps for heading off conflict and encouraging cooperation.

Water Conflict and Cooperation Working Group Members

Inger Andersen, World Bank

Kent Butts, U.S. Army War College

Ken Conca, University of Maryland

Geoffrey Dabelko, Woodrow Wilson International Center for Scholars

Kirk Emerson, University of Arizona

Patricia Kameri-Mbote, Strathmore University, Nairobi

Aaron Salzberg, U.S. Department of State

Anthony Turton, TouchStone Resources and International Water Resource Association

Aaron Wolf, Oregon State University

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JULY 2006
NO. 1

Navigating Peace

www.wilsoncenter.org/water

(Photo © Avner Vengosh)

WATER CAN BE A PATHWAY TO PEACE, NOT WAR

By Aaron T. Wolf, Annika Kramer, Alexander Carius, and Geoffrey D. Dabelko

"Water wars are coming!" the newspaper headlines scream. It seems obvious—rivalries over water have been the source of disputes since humans settled down to cultivate food. Even our language reflects these ancient roots: "Rivalry" comes from the Latin *rivalis*, or "one using the same river as another." Countries or provinces bordering the same river (known as "riparians") are often rivals for the water they share. As the number of international river basins (and impact of water scarcity) has grown, so do the warnings that these countries will take up arms to ensure their access to water. In 1995, for example, World Bank Vice President Ismail Serageldin claimed that "the wars of the next century will be about water."

These apocalyptic warnings fly in the face of history: No nations have gone to war specifically over water resources for thousands of years. International water disputes— even among fierce enemies—are resolved peacefully, even as conflicts erupt over other issues. In fact, instances of cooperation between riparian nations outnumbered conflicts by more than two to one between 1945 and 1999. Why? Because water is so important, nations cannot afford to fight over it. Instead, water fuels greater interdependence. By coming together to jointly manage their shared water resources, countries can build trust and prevent conflict. Water can be a negotiating tool, too: It can offer a communication lifeline connecting countries in the midst of crisis. Thus, by crying "water wars," doomsayers ignore a promising way to help *prevent* war: cooperative water resources management.

Of course, people compete—sometimes violently—for water. Within a nation, users—farmers, hydroelectric dams, recreational users, environmentalists—are often at odds, and the probability of a mutually acceptable solution falls as the number of stakeholders rises. Water is never the single—and hardly ever the major—cause of conflict. But it can exacerbate existing tensions. History is littered with examples of violent water conflicts: Just as Californian farmers bombed pipelines moving water from Owens Valley to Los Angeles in the early 1900s, Chinese farmers in Shandong clashed with police in 2000 to protest government plans to divert irrigation water to

Number of Countries Sharing a River Basin

NUMBER OF COUNTRIES	INTERNATIONAL BASINS
3	Asi (Orontes), Awash, Cavally, Cestos, Chiloango, Dnieper, Dniester, Drin, Ebro, Essequibo, Gambia, Garonne, Gash, Geba, Har Us Nur, Hari (Harirud), Helmand, Hondo, Ili (Kunes He), Incomati, Irrawaddy, Juba-Shibeli, Kemi, Lake Prespa, Lake Titicaca-Poopo System, Lempa, Maputo, Maritsa, Maroni, Moa, Neretva, Ntem, Ob, Oueme, Pasvik, Red (Song Hong), Rhone, Ruvuma, Salween, Schelde, Seine, St. John, Sulak, Torne (Tornealven), Tumen, Umbeluzi, Vardar, Volga, and Zapaleri
4	Amur, Daugava, Elbe, Indus, Komoe, Lake Turkana, Limpopo, Lotagipi Swamp, Narva, Oder (Odra), Ogooue, Okavango, Orange, Po, Pu-Lun-T'o, Senegal, and Struma
5	La Plata, Neman, and Vistula (Wista)
6	Aral Sea, Ganges-Brahmaputra-Meghna, Jordan, Kura-Araks, Mekong, Tarim, Tigris and Euphrates (Shatt al Arab), and Volta
8	Amazon and Lake Chad
9	Rhine and Zambezi
10	Nile
11	Congo and Niger
17	Danube

Note: From "International River Basins of the World" by Aaron T. Wolf et al., 1999, *International Journal of Water Resources Development 15*(4), 387–427. Adapted with permission of the author.

cities and industries. But these conflicts usually break out *within* nations. International rivers are a different story.

The world's 263 international river basins cover 45.3 percent of Earth's land surface, host about 40 percent of the world's population, and account for approximately 60 percent of global river flow. And the number is growing, largely due to the "internationalization" of basins through political changes like the breakup of the Soviet Union, as well as improved mapping technology. Strikingly, territory in 145 nations falls within international basins, and 33 countries are located almost entirely within these basins. As many as 17 countries share one river basin, the Danube.

Contrary to received wisdom, evidence shows this interdependence does not lead to war. Researchers at Oregon State University compiled a dataset of

every reported interaction (conflictive or cooperative) between two or more nations that was driven by water in the last half century. They found that the rate of cooperation overwhelms the incidence of acute conflict. In the last 50 years, only 37 disputes involved violence, and 30 of those occurred between Israel and one of its neighbors. Outside of the Middle East, researchers found only 5 violent events, while 157 treaties were negotiated and signed. The total number of water-related events, between nations also favors cooperation: The 1,228 cooperative events dwarf the 507 conflict-related events. Despite the fiery rhetoric of politicians—aimed more often at their own constituencies than at the enemy—most actions taken over water are mild. Of all the events, more than 60 percent are verbal, and more than two-thirds of these were not official statements.

Simply put, water is a greater pathway to peace than conflict in the world's international river basins. International cooperation around water has a long and successful history; some of the world's most vociferous enemies have negotiated water agreements. The institutions they have created are resilient, even when relations are strained. The Mekong Committee, for example, established by Cambodia, Laos, Thailand, and Vietnam in 1957, exchanged data and information on the river basin throughout the Vietnam War.

Israel and Jordan held secret "picnic table" talks to manage the Jordan River starting in 1953, even though they were officially at war from 1948 until the 1994 treaty. The Indus River Commission survived two major wars between India and Pakistan. And all 10 Nile basin riparian countries are currently involved in senior government–level negotiations to develop the basin cooperatively, despite the verbal battles conducted in the media. Riparians will endure such tough, protracted negotiations to ensure access to this essential resource and its economic and social benefits.

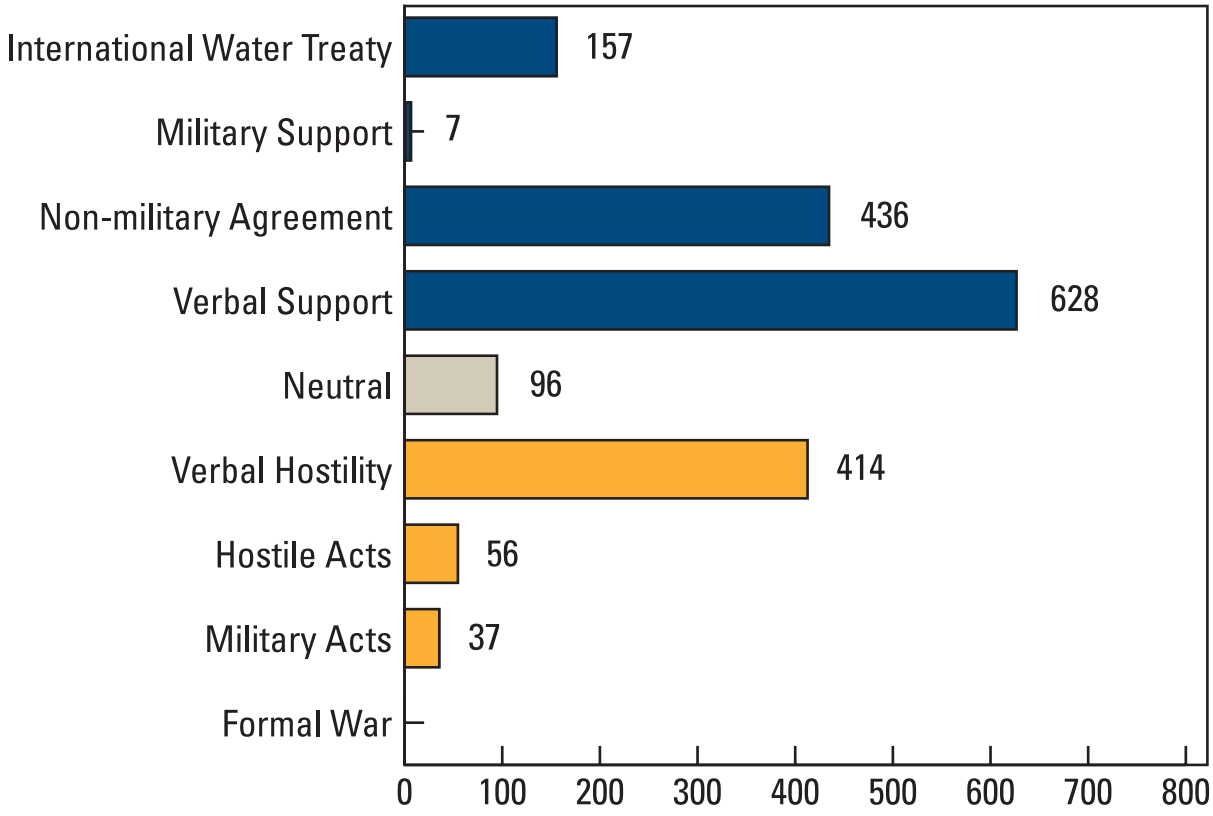
Southern African countries signed a number of river basin agreements while the region was embroiled in a series of wars in the 1970s and 1980s, including the "people's war" in South Africa and civil wars in Mozambique and Angola. These complex negotiations produced rare moments of peaceful cooperation. Now that most of the wars and the apartheid era have ended, water management forms one of the foundations for cooperation in the region, producing one of the first protocols signed within the Southern African Development Community (SADC).

Today, more than ever, it is time to stop propagating threats of "water wars" and aggressively pursue a water peacemaking strategy. Why?

- "Water wars" warnings force the military and other security groups to take over negotiations and push out development partners, like aid agencies and international financial institutions.
- Water management offers an avenue for peaceful dialogue between nations, even when combatants are fighting over other issues.
- Water management builds bridges between nations, some with little experience negotiating with each other, such as the countries of the former Soviet Union.
- Water cooperation forges people-to-people or expert-to-expert connections, as demonstrated by the transboundary water and sanitation projects Friends of the Earth Middle East conducts in Israel, Jordan, and Palestine.
- A water peacemaking strategy can create shared regional identities and institutionalize cooperation on issues larger than water, as exemplified by the formation of SADC in post-apartheid southern Africa.

Good governance—the lack of corruption—is the basic foundation for the success of any agreement. Obviously, money is also a big challenge. But good

1,831 State-to-State Water Interactions in Transboundary Basins, 1946–1999



Note: The data are from "International Waters: Identifying Basins at Risk" by Aaron Wolf, Shira Yoffe, and Marc Giordano, 2003, *Water Policy* 5(1), 31-62. Adapted with permission of the author.

governance and money are not enough. Several policy initiatives could help peacemakers use water to build peace:

1. **Identify and utilize more experienced facilitators who are perceived as truly neutral**. The World Bank's success facilitating the Nile Basin Initiative suggests they have skills worth replicating in other basins.

2. **Be willing to support a *long* process that might not produce quick or easily measurable results**. Sweden's 20-year commitment to Africa's Great Lakes region is a model to emulate. Typical project cycles—often governed by shifting government administrations or political trends—are not long enough.

3. **Ensure that the riparians themselves drive the process**. Riparian nations require funders and facilitators who do not dominate the process and claim all the glory. Strengthening less powerful riparians' negotiating skills can help prevent disputes, as can strengthening the capacity of excluded, marginalized, or weaker groups to articulate their interests.

4. **Strengthen water resource management**. Capacity building—to generate and analyze data, develop sustainable water management plans, use conflict resolution techniques, or encourage stakeholder participation—should target water management institutions, local nongovernmental organizations, water users' associations, and religious groups.

5. **Balance the benefits of closed-door, high-level negotiations with the benefits of including all stakeholders—NGOs, farmers, indigenous groups—throughout the process**. Preventing severe conflicts requires informing or explicitly consulting all relevant stakeholders before making management decisions. Without such extensive and regular public participation, stakeholders might reject projects out of hand.

Water management is, by definition, conflict management. For all the 21st century wizardry—dynamic modeling, remote sensing, geographic information systems, desalination, biotechnology, or demand management—and the new-found concern with globalization and privatization, the crux of water disputes is still little more than opening a diversion gate or garbage floating downstream. Obviously, there are no guarantees that the future will look like the past; water and conflict are undergoing slow but steady changes. An unprecedented number of people lack access to a safe, stable supply of water. Two to five million people die each year from water-related illness. Water use is shifting to less-traditional sources such as deep fossil aquifers and wastewater reclamation. Conflict, too, is becoming less traditional, driven increasingly by internal or local pressures or, more subtly, by poverty and instability. These changes suggest that tomorrow's water disputes may look very different from today's.

No matter what the future holds, we do not need violent conflict to prove water is a matter of life and death. Water—being international, indispensable, and emotional—can serve as a cornerstone for confidence building and a potential entry point for peace. More research could help identify exactly how water best contributes to cooperation. With this, cooperative water resources management could be used more effectively to head off conflict and to support sustainable peace among nations.

BIOGRAPHIES

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Woodrow Wilson International Center for Scholars

AUGUST 2006
NO. 2

Navigating Peace
www.wilsoncenter.org/water

THE CHALLENGES OF GROUNDWATER IN SOUTHERN AFRICA

By Anthony Turton, Marian Patrick, Jude Cobbing, and Frédéric Julien

(Photo © Kirk Emerson)

It is impossible to understand the developmental constraints of Africa without grasping the significance of water resources, particularly groundwater. Southern Africa[1] faces potentially severe groundwater shortages, which not only imperil the lives of those directly dependent on it, but also the continued development of the economic engines of the region—South Africa, Botswana, and Namibia—all of which face significant constraints on their future economic growth due to the insecurity of water supply. In addition, groundwater resources are the foundation of rural water supplies, which sustain livelihoods for the poorest of the poor communities.

Today's best practice in sustainable water management—Integrated Water Resource Management—focuses on river basins as the units of management. However, this overlooks two fundamental realities in southern Africa:

1. Groundwater aquifer systems, while being an integral part of the overall water resource, seldom correspond with the surface water management unit—the river basin; and
2. In almost all cases, groundwater systems are, by their very nature, transboundary.

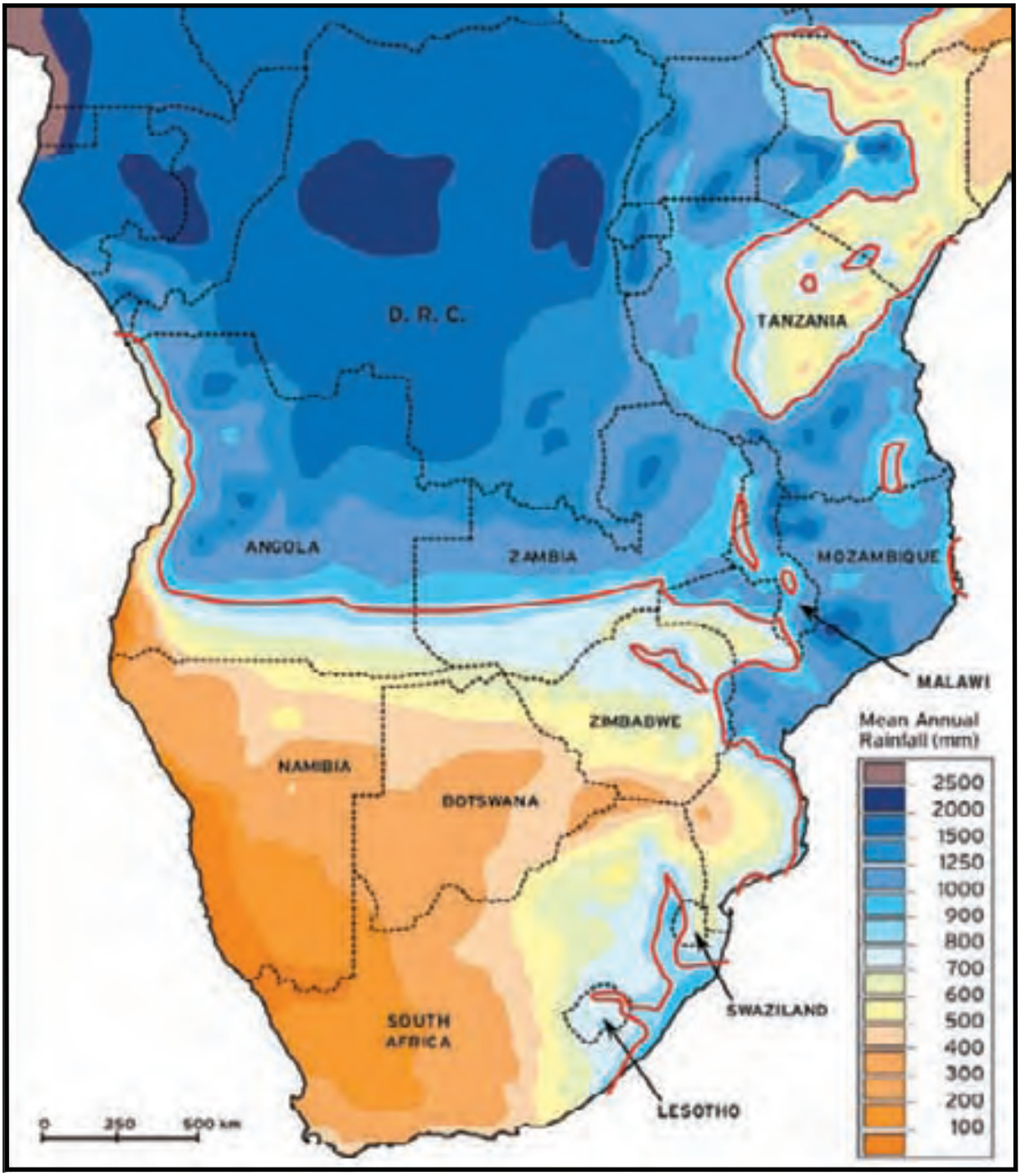
While a complex set of agreements govern transboundary river basins in southern Africa, the region lacks international groundwater treaties of similar sophistication and status, which could be a potential cause of future conflict.

The Groundwater Problem in Southern Africa

Water resource management is almost always transboundary. Water resource management in Africa is, like the continent itself, a product of its colonial past. The colonial powers divided the continent into units that tended to be defined by rivers. Within the 53 African countries, 63 river basins cross international borders. Thus, there are more transboundary river basins than sovereign states. These river basins cover two-thirds of the continent's surface area, in which three-quarters of the human population lives, accounting collectively for a staggering

1. Here, southern Africa is defined as the continental countries that are members of the Southern African Development Community (SADC); see http://www.sadc.int

Map 1: Precipitation in Southern Africa



Note: Precipitation in southern Africa is unevenly distributed, with the four most economically developed countries—South Africa, Namibia, Botswana, and Zimbabwe—on the "wrong" side of the global annual average of 860 mm, shown as a red line. Map courtesy of Peter Ashton.

93 percent of all surface water. And significantly, there are more transboundary aquifers in southern Africa than there are transboundary river basins.

Water is unevenly distributed in both space and time. The four most economically developed countries in the region—South Africa, Namibia, Botswana, and Zimbabwe—are all on the "wrong" side of the global average annual rainfall (see Map 1). Their future economic growth is potentially limited by the insecurity of water supply.

Southern Africa has an inherently low conversion rate of rainfall to runoff, which affects both surface water river flows and groundwater recharge. Of the rainfall that falls to earth in an average year, only a small portion is converted to water flowing in rivers. Southern Africa, along with Australia, has the lowest conversion of rainfall to runoff in the world. Groundwater recharge is also largely dependent on rainfall, but in a nonlinear fashion: Below the critical threshold of 500 mm of mean annual rainfall, a dramatic drop-off in recharge occurs. Therefore, recharge is generally low in southern Africa. Drought-proofing Africa requires a major investment in infrastructure to store the limited streamflow and assure the supply level necessary to provide a stable foundation for a modern industrial economy.

Given the nonlinear nature of groundwater recharge at low levels of rainfall, coupled with the prediction of a hotter and drier future due to global climate change, a reduction in aquifer recharge is a real likelihood. Looking at the scenario considered most likely by mainstream climate change scientists in Africa, southern Africa is the one part of the planet that is expected to become both warmer and drier by 2050.[2] If one accepts this prediction, the groundwater situation in southern Africa is likely to become much worse, with considerable reduction in recharge and hence, an increase in vulnerability of the poor.

Policy Recommendations

- Although the river basin is the generally accepted unit of management, we must recognize that aquifer systems do not coincide neatly with river basins. Therefore, we need policy-related research on groundwater to assist decision-makers with the management of this complex resource. In addition, we call for support of the Alicante Declaration, which seeks to establish a framework for groundwater management.[3]

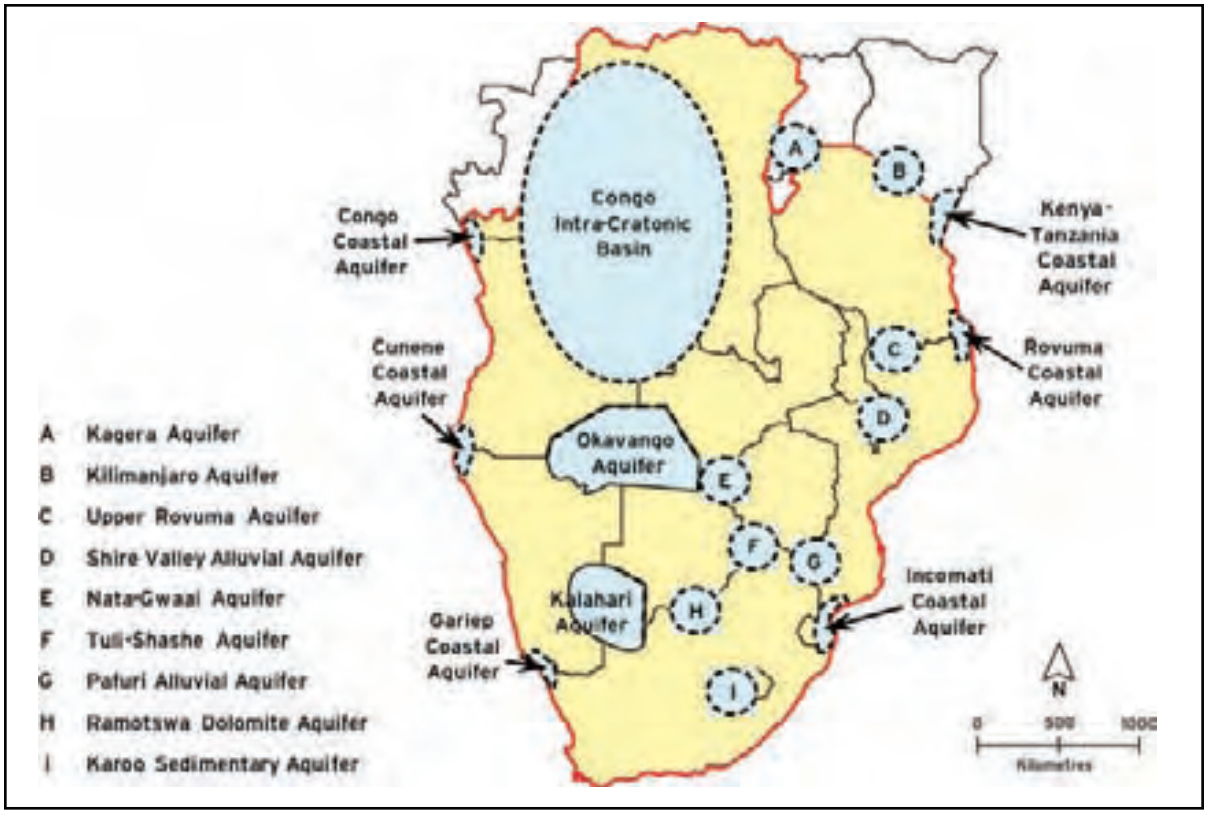
- Groundwater is almost always transboundary in nature. Aquifers crossing international political borders pose different problems than river basins. While the Southern African Development Community (SADC) is characterized by a relatively sophisticated set of surface water agreements, it conspicuously lacks agreements dealing specifically with groundwater. The region needs to: (a) more accurately map transboundary groundwater resources (see Map 2 and table); (b) classify such resources in terms of hydrogeological characteristics and future demands; and (c) generate management regimes that are capable of dealing with the problems associated with the resources' specific hydrogeological characteristics.

- Poverty eradication initiatives such as the Millennium Development Goals cannot be successful without recognizing the links between development, water resource management, aand global climate change. We must generate consensus on

2. The HADCM3 Global Climate Change model using the IPCC SRES A2 Scenario predicts a hotter and drier southern Africa by 2050; see Scholes, Robert J., & R. Biggs. (2004). *Ecosystem services in southern Africa: A regional assessment.* Pretoria, South Africa: Council for Scientific and Industrial Research.

3. See http://www.worldwatercouncil.org/fileadmin/wwc/World_Water_Forum/WWF4/declarations/Alicante_Declaration.doc

Map 2: Some Transboundary Aquifer Systems in Southern Africa



Note: Map redrawn and modified from "Water and Security in Sub-Saharan Africa: Emerging Concepts and Their Implications for Effective Water Resource Management in the Southern African Region," by Peter J. Ashton and Anthony R. Turton, 2008, in Hans G. Brauch et al. (Eds.), *Globalisation and Environmental Challenges*. Berlin: Springer Verlag. Adapted with permission of the author.

the need to reach agreement on carbon emission targets, and we call upon SADC, Brazil, India, and China (as rapidly industrializing nations) to cooperate in negotiations to this end.

If we are serious about poverty eradication in southern Africa, then we must be acutely aware of the link between transboundary water resource management and changing patterns of resource use. In almost all cases, significant resources—both surface and groundwater—are transboundary in nature. The four most economically developed countries in the region are all approaching limitations on future economic growth and development due to low assurance of water supply. The region's countries share a number of transboundary water resources and all have a vested interest in reaching agreement on their management in a fair, equitable, and peaceful fashion.

Table: Known Transboundary Aquifer Systems by SADC Countries

Riparian State \ Aquifer	Cunene Coastal	Cuvelai	Congo Coastal	Congo Intra-Cratonic	Gariep Coastal	Incomati Coastal	Kagera	Kalahari	Karoo Sedimentary	Kenya-Tanzania Coastal	Kilimanjaro	Limpopo Granulite-Gneiss Belt	Nata-Gwaai	Okavango	Okavango-Epukiro	Pafuri Alluvial	Pomfret-Vergelegen Dolomitic	Ramotswa Dolomite	Rovuma Coastal	Shire Valley Alluvial	Tuli-Shashe	Upper Rovuma	*shared aquifers*
Angola	X	X	X	X										X									
Botswana								X				X	X	X	X		X	X			X		8
Congo (DRC)			X	X																			2
Lesotho									X														
Madagascar																							0
Malawi																				X			1
Mauritius																							0
Mozambique						X													X	X		X	5
Namibia	X	X			X			X						X	X								6
South Africa					X	X		X	X			X				X	X	X			X		9
Swaziland						X																	1
Tanzania											X											X	5
Zambia				X										X									
Zimbabwe												X	X			X							4
states sharing	2	2	2	3	2	3	1	3	2	1	1	3	3	4	2	3	2	2	2	2	3	2	

Note: Table adapted from "Unpacking Groundwater Governance Through the Lens of a Trialogue: A Southern African Case Study" by Anthony R. Turton, Linda Godfrey, Frédéric Julien, & Julian Hattingh, 2006, January. Paper presented at the International Symposium on Groundwater Sustainability, University of Alicante and the Spanish Royal Academy of Sciences, Alicante, Spain. Adapted with permission of the author.

BIOGRAPHIES

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Woodrow Wilson International Center for Scholars

NOVEMBER 2006
NO. 3

Navigating Peace
www.wilsoncenter.org/water

THE NEW FACE OF WATER CONFLICT

By Ken Conca

Amid the talk of looming "water wars," a less dramatic—but more immediate—link between water and violence is often ignored: the violence engendered by poor governance of water resources. Policies to expand water supplies, develop hydroelectric power, alter freshwater ecosystems, or change the terms of access to water can have devastating impacts on the livelihoods, cultures, and human rights of local communities. As these communities learn to voice their grievances, build networks across borders, and connect with human rights and environmental activists, once-local conflicts become international disputes. As a result, policymakers at all levels are being forced to rethink water's role in development. To ensure water security in the 21st century, social conflicts over water must be managed in ways that accommodate the full range of people affected by water development projects.

Social Conflicts Over Water

Social conflicts over water are, to some extent, inevitable, given water's multiple functions: It is a basic human need, the foundation of livelihoods, the lifeblood of critical ecosystems, a cultural symbol, and a marketable commodity. Managing social conflict is central to good water management. However, as the development of water resources and the transformation of freshwater ecosystems have intensified, so have the conflicts.

Social conflicts around water are not only increasing, but also being transformed by two simultaneous global revolutions. The communications revolution has produced an explosion in global networks, access to information, and personal mobility, making it easier for affected communities and sympathetic advocacy groups to partner with those in other countries. The democratic revolution has increased the ability of people in previously closed societies to organize and express dissent, making it easier (though not always easy) for communities to oppose projects or policies that harm their interests, livelihoods, and cultures. As a result of these two revolutions, conflicts that were once largely local matters have been dragged into international arenas.

Capital-intensive water infrastructure projects—such as large dams, irrigation schemes, and transportation canals—are the focus of some of these conflicts. The affected communities are typically rural and poor, and frequently home to cultural minorities or otherwise disempowered groups. The World Commission on Dams estimated in its 2000 report that such projects have forced some 40-80 million people to relocate—many without adequate compensation and most with little or no say in the process. Project sites have been the scene of many violent confrontations between communities and governments; in addition, project supporters have targeted local activists for violence.

Changes in **community access to water supplies** can also generate social conflict. The increasing difficulty of financing water-supply infrastructure, as well as pressure from international financial institutions, has led some governments to contract out water services to the private sector. Many more are "marketizing" water by increasing prices, cutting off service for nonpayment, or otherwise limiting access to water. In Cochabamba, Bolivia, in 2000, large protests against price increases and concessions given to a private multinational consortium led the government to declare a state of emergency and deploy the army; at least one person died and more than 100 were injured in clashes with security forces. Similar protests (on a lesser scale) have broken out in many countries, recently claiming lives in China, India, Pakistan, Colombia, Kenya, and Somalia.

Finally, **impacts on critical socio-ecological systems** that provide environmental services and sustain local livelihoods can trigger conflict. Aquaculture, for example, is an increasingly important source of food around the world, as well as a popular development strategy in many tropical coastal regions. Yet industrial-scale fish farming, particularly for shrimp, often has a severe impact on local communities: it can lead to water pollution, wastewater dumping, eutrophication, saltwater intrusion, mangrove deforestation, and the privatization of traditionally community-owned resources. These problems have spurred affected communities to protest, call for boycotts, and take other direct actions, to which some governments have responded by using coercive force and targeting local activists.

We must address these social conflicts over water because human rights and environmental justice are intrinsically important, particularly for people who are marginalized by current economic structures and development initiatives. In addition, the broad legitimacy needed to institute reform will not be obtained without better ways to resolve conflict, increase participation by members of affected communities, and encourage stakeholder dialogue—especially important now, when many countries are redesigning water laws, policies, and practices to emphasize conservation, environmental protection, efficient resource use, and integrated water resources management. Above all, we should view systematic and repeated protests as evidence that policies have failed—an early warning that must not be ignored in the rush to implement particular notions of development.

Policy Recommendations

- **Strengthen the human right to water.** The UN Committee on Economic, Social, and Cultural Rights has recognized the human right to water, including the obligation of states to respect, protect, and fulfill water rights. The human right to water is also implicit in rights to food, survival, and an adequate standard of living, and in peoples' right to manage their own

resources. The challenge is giving these rights concrete—rather than theoretical—meaning. To achieve this goal, we should recognize the right to water in national framework laws and international development assistance practices; create better mechanisms to hold both state and nonstate actors accountable for implementing and complying with existing laws and policies; and ensure that economic reforms are implemented within a human rights framework.

- **Treat water projects as a means, not an end**. Too often, development agencies treat projects as an end rather than a means, and thus fail to assess the full range of alternatives. Worsening this problem are competition between donor agencies, corruption, and the practice of subsidizing dubious projects through export credit agencies. Donor agencies and host governments alike must improve their ability to survey all the options and choose those with the fewest negative impacts. In addition, they should remember that their ultimate aims are reducing poverty, meeting basic needs, and increasing human security, not simply reproducing familiar projects and continuing business as usual.

- **Create better ways to resolve environmental disputes**. The lack of effective mechanisms for resolving environmental disputes is perhaps the weakest link in the chain of global environmental governance. While useful, current mechanisms—such as the Permanent Court of Arbitration, the World Bank's inspection panel, or the World Trade Organization's dispute resolution procedures—fail to provide effective, inclusive, and dispute-transforming outcomes consistently. The UN's High-Level Panel on System-Wide Coherence in the Areas of Development, Humanitarian Assistance, and Environment is currently considering a wide range of reforms. Its recommendations should include establishing a mechanism for arbitrating, resolving, and transforming disputes that involve not only governments, but also intergovernmental organizations, transnational business, NGOs, and local communities.

- **Learn lessons from transnational stakeholder dialogue initiatives**. As traditional interstate institutions have proved unable to manage cross-border conflicts over water and other resources effectively, broader and more inclusive "stakeholder dialogues" have begun to emerge, such as the World Commission on Dams. These initiatives are not a panacea, however. In addition, there is no easy way to identify all the stakeholders in a given dispute. Yet these efforts raise the bar by giving affected people a voice. In addition, they offer important lessons on how to build global consensus: Recognize and work through difficult disagreements rather than seek "least-common-denominator" statements of general principles; cooperatively build knowledge through open, participatory processes; and support such "global" dialogues with robust national stakeholder forums.

- **Broaden participation in international river agreements.** Internationally shared river basins are often the subject of international diplomacy. Too often, however, this diplomacy is limited to dividing water supplies equitably between nations and reducing the potential for international conflict. Although these goals are important, they do little to address the human security of people living in the basin. Few international river basin agreements or the institutions they create include robust mechanisms for incorporating civil society. Without broad participation and a focus on human security, the rush to promote interna-

tional cooperation—often driven by proposed large-scale water infrastructure projects—may simply accelerate exploitation of water resources.

- **Recognize the global demands that drive local resource pressures.** Social conflicts over water often arise at a local level, on the scale of a city or a watershed. Yet they may be driven by powerful external forces. The growth of industrial fish farming is fueled by changing consumer tastes in rich countries. Big hydroelectric projects in remote locations often power industrial processing facilities that plug into the global economy, while bypassing local economies and imposing a heavy burden on local communities. Local initiatives to improve water governance must be supported by mechanisms that connect the dots between global drivers and local impacts, such as product certification, consumer information campaigns, and "cradle-to-grave" accountability.

- **Do not sacrifice water rights to meet climate change goals.** As pressure mounts to respond to the threat of global climate change, poorly conceived hydroelectric projects may be pushed through as "clean" development projects. Hydroelectricity has its place in the world's energy-supply mix. But climate change will also affect stream flow and local water cycles—problems that can be dramatically worsened by some water-infrastructure projects. Rushing to replace "big fossil" with "big hydro" risks increasing the substantial water burdens confronting local communities in a greenhouse world.

BIOGRAPHY

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Woodrow Wilson International Center for Scholars

JANUARY 2007
NO. 4

Navigating Peace
www.wilsoncenter.org/water

(Photo © Inger Andersen)

WATER, CONFLICT, AND COOPERATION: LESSONS FROM THE NILE RIVER BASIN

By Patricia Kameri-Mbote

In 1979, Egyptian President Anwar Sadat said: "The only matter that could take Egypt to war again is water." In 1988, then-Egyptian Foreign Minister Boutros Boutros-Ghali, who later became the United Nations' Secretary-General, predicted that the next war in the Middle East would be fought over the waters of the Nile, not politics. Rather than accept these frightening predictions, we must examine them within the context of the Nile River basin and the relationships forged among the states that share its waters.

The Nile River Basin

Ten countries share the basin of the Nile, arguably the world's longest river: Burundi, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda, and the Democratic Republic of the Congo (see map). The basin's three million square kilometers cover about 10 percent of the African continent. Approximately 160 million people depend on the Nile River for their livelihoods, and about 300 million people live within the 10 basin countries. Within the next 25 years, the region's population is expected to double, adding to the demand for water, which is already exacerbated by the growth of the region's industries and agriculture. The constant threat of droughts increases the urgency of the problem, and pollution from land-use activities affects downstream water quality. Finally, except for Kenya and Egypt, all of the basin countries are among the world's 50 poorest nations, making their populations even more vulnerable to famine and disease.

Egypt and Sudan hold absolute rights to use 100 percent of the river's water under agreements reached in 1929 between Egypt and Britain (which was then the colonial power in Kenya, Sudan, Tanzania, and Uganda) and in 1959 between Egypt and Sudan.

The Nile River Basin

Source: Printing, Graphics and Map Design Unit, The World Bank

Since Egypt must consent to other nations' use of the Nile's water, most of the other basin countries have not developed projects that use it extensively. Not surprisingly, over the years other basin countries have contested the validity of these treaties and demanded their revocation to make way for a more equitable system of management.

Conflict and Cooperation in the Nile River Basin

Conflict over the Nile's waters could fan existing conflicts in the Greater Horn of Africa, making them more complex and harder to address. Tensions in the Greater Horn of Africa are of great concern to the international community, due to its volatility and proximity to the Middle East. Conflicts emerging here might spread political, social, and economic instability into the surrounding areas. In a river basin, conflict is most likely to emerge when the downstream nation is militarily stronger than nations upstream, and the downstream nation believes its interests in the shared water resource are threatened by actions of the upstream nations. In the Nile basin, the downstream nation, Egypt, controls the region's most powerful military, and fears that its upstream neighbors will reduce its water supply by constructing dams without its consent.

Despite this gloomy scenario, interstate war is unlikely, according to history: No nations have gone to war specifically over water resources for thousands of years. Instances of cooperation between riparian nations outnumbered conflicts by more than 2-to-1 between 1945 and 1999.[1] Instead of war, water fuels greater interdependence. By coming together to jointly manage their shared water resources, countries build trust and prevent conflict. In the face of potential conflict and regional instability, the Nile basin countries continue to seek cooperative solutions.

By coming together to jointly manage their shared water resources, countries build trust and prevent conflict. In the face of potential conflict and regional instability, the Nile basin countries continue to seek cooperative solutions.

The political will to develop a new legal framework for managing the Nile should continue. In principle, the countries of the Nile River basin agree that the situation should change. However, they do not agree on how. To help reach a consensus, they developed the high-level Nile Basin Initiative (NBI) in 1999. Originally designed as a way to share scientific information, the NBI today brings together ministers from the basin countries "to achieve sustainable socio-economic development through equitable utilization of, and benefit from, the common Nile basin water resources," as stated in its shared vision.[2] The NBI has served as a catalyst for cooperation in the search for a new legal framework for the management of the Nile.

However, high-level negotiations like the NBI are not enough; civil society must be involved. Since the inhabitants of a river basin play critical roles in the success of any international agreement, interstate nego-

tiations should also include stakeholders beyond the national governments. Civil society engagement and participation in the development of the Nile basin have been facilitated not only through the NBI's Civil Society Stakeholder Initiative but also through the Nile Basin Discourse (NBD). The NBD's National Discourse Forums, established in each of the basin countries, provide a venue for all the Nile's users to air their expectations and grievances. Through these forums, stakeholders can provide input into development projects along the river basin. The NBD involves a broader array of stakeholders than the traditional state representatives, thus allowing users at the lowest levels—including farmers, women's groups, fishers, and existing community-based organizations—to participate in the development of a legal framework.

The Nile Basin Initiative has served as a catalyst for cooperation in the search for a new legal framework for the management of the Nile.

Policy Recommendations

- **Recognize that environmental resources such as water can be pathways to peace.** While people will likely fight with their neighbors over water, nations have not, historically preferring cooperation over conflict.

- **Use water diplomacy to build sustainable development, democracy, and equality**. Water management schemes must promote equitable use for current and future users, increase access, share benefits, and encourage broad participation.

- **Engage non-state actors (such as farmers, fishers, women's groups, and community-based organizations) in finding cooperative solutions to potential water conflicts**.

- **Develop the capacity of civil society groups to ensure they can meaningfully contribute to basin-wide initiatives**. Such capacity building will bridge the endowment gap between civil society and government. It will also enable local users to demand access to benefits governed by interstate agreements while continuing to "buy in" to basin-wide initiatives, reducing the chances of conflict.

- **Coordinate the efforts of bilateral and multilateral funding institutions operating in the basin to realize synergies and engender cooperation over water.** These institutions include the Canadian International Development Agency (CIDA), the Swedish International Development Cooperation Agency (SIDA), and the United Kingdom's Department for International Development (DFID), as well as the World Bank.

Basin states are interdependent and their development is inevitably linked to the river's hydrologic cycle. Coordinated management of the waters of the Nile is beginning to create synergy in different countries and sectors, and contribute to overall cooperation. The Nile basin countries could resolve conflicts by planning and

Water management schemes must promote equitable use for current and future users, increase access, share benefits, and encourage broad participation.

managing water resources jointly to achieve sustainable development and regional stability, under a sound legal and institutional framework agreed to by all parties. Reaching this agreement will require involving all stakeholders in transboundary water management, building trust among them, creating a common bond, and identifying shared interests.

Collaborative management of the Nile's water resources could act as a catalyst for peace in a region beset by conflict. If we deal effectively with shared water, we could help mitigate not only the daily struggle for life, but also the deadly battles that threaten to pit tribe against tribe, clan against clan, family against family, and neighbor against neighbor.

NOTES

1. Wolf, Aaron, Shira Yoffe, & Marc Giordano. (2003). "International waters: Identifying basins at risk." *Water Policy* 5(1), 31-62. See also Navigating Peace No. 1, "Water can be a pathway to peace, not war," available at http://www.wilsoncenter.org/water

2. See http://www.nilebasin.org for more information and a list of members and partners.

BIOGRAPHY

Patricia Kameri-Mbote is a professor of law at Strathmore University (Nairobi) and an advocate of the High Court of Kenya. She is also programme director for the International Environmental Law Research Centre. Previously, she chaired the University of Nairobi's Department of Private Law and served as acting dean for the Faculty of Law. She was the first chair of the Kenya Nile Discourse Forum, a network of civil society organizations working with other national discourse forums in the Nile River basin to influence development of projects and programs under the Nile Basin Initiative (NBI) and other Nile-related programs. She was an Open Society Institute Africa Policy Scholar at the Woodrow Wilson Center in 2006.

Best of the Beat: Highlights From the First Year
newsecuritybeat.blogspot.com

The *New Security Beat*, ECSP's blog, was launched in January 2007 to shed light on some of today's broader security issues, including water scarcity, environmental degradation, and population growth. The posts below are selected highlights from the first year of the *New Security Beat,* which won a 2008 Global Media Award for Excellence in Population Reporting in the category of "Best Online Commentary." We invite you to become part of our global readership by visiting us on the web at http://newsecuritybeat.blogspot.com.

Georgetown University Professor Colin Kahl (Courtesy Heidi Fancher, Wilson Center)

Guest Contributor Colin Kahl on Kenya's Ethnic Land Strife

By Colin Kahl, Assistant Professor, Security Studies Program, Georgetown University School of Foreign Service

January 8, 2008

http://newsecuritybeat.blogspot.com/2008/01/guest-contributor-colin-kahl-on-kenyas.html

A story in yesterday's *New York Times* describes an expanding campaign of ethnic cleansing against the Kikuyu tribe in western Kenya. We've seen this story before. In my 2006 book *States, Scarcity, and Civil Strife in the Developing World*, I explained how rapid population growth, environmental degradation, and historical land grievances collided with multi-party elections in the early 1990s to provide opportunities for Kenyan elites to gain power and wealth by violently mobilizing ethnic groups against one another. The ensuing violence pitted the Kalenjin and other smaller tribal communities engaged in pastoral activities against the Kikuyu, Luo, and other traditional farming communities in the fertile Rift Valley, leaving more than a thousand Kenyans dead and hundreds of thousands homeless.

Sound familiar? Demographically and environmentally induced ethnic land competition—at the heart of the 1990s conflicts—remains

Broadcast journalist and Global Media Award-winner Melclaire R. Sy-Delfin (Courtesy Heidi Fancher, Wilson Center)

Without focused efforts to improve degraded resources and reduce population growth, the Filipino philosophy "Bahala na"—roughly equivalent to "que sera, sera"—may let the wells run dry.

problematic today. Deep-seated grievances emanating from struggles over scarce farmland provide ample opportunities for elites across the political spectrum to mobilize tribal supporters to engage in violence and ethnic land cleansing during times of electoral instability—especially in rural areas, where strong group identification facilitates such mobilization. This didn't happen during the last presidential election, in 2002, because elites bought into the democratic process and the elections were viewed as fair. In addition, the Kenyan Electoral Commission and the international community, in an effort to prevent a repeat of the strife in 1992 and 1997, closely scrutinized electoral behavior in 2002.

This time, the apparent rigging of the election by the Kibaki regime—which many minority tribes view as having used its political power to unfairly benefit its own Kikuyu tribe—unleashed the latent grievances against the Kikuyu still present in Kenyan society. "You have to understand that these issues are much deeper than ethnic," Maina Kiai, chairman of the Kenya National Commission on Human Rights, told the *Times*. "They are political… they go back to land."

Sources: New York Times, Woodrow Wilson Center, Princeton University Press

"Bahala na"? Population Growth Brings Water Crisis to the Philippines

By Meaghan Parker, ECSP

January 4, 2008

http://newsecuritybeat.blogspot.com/2008/01/bahala-na-population-growth-brings.html

A report by Filipino TV journalist Melclaire R. Sy-Delfin—recent Global Media Award winner and subject of an ECSP podcast—warns that a water crisis could threaten the 88 million residents of the Philippines as early as 2010. According to Delfin, 27 percent of Filipinos still lack access to drinking water, despite successful government programs to increase supply.

Why? "There has been too much focus on developing new sources of supply rather than on better management of existing ones," said Department of Environment and Natural Resources Secretary Angelo Reyes at a January 2007 conference. Almost all of the country's watersheds are in critical condition, devastated by logging, erosion, sedimentation, mining, overgrazing, and pollution.

Population growth is also erasing the government's gains. "From 1995 to 2005, the government has successfully provided water for an additional 23.04 million. However, the population increased by 24.5 million over the same period," National Water Resources Board Director Ramon Alikpala told a UNDP meeting.

Growing by more than 2 percent annually, the Philippines' population could top 90 million next year. Delfin told a Wilson Center audience she has met "women with eight children who want to stop giving birth but no knowledge of how to do it," and decried the "lack of natural leadership" from President Gloria Arroyo.

The Philippines House of Representatives' version of the 2008 budget—currently in conference—includes almost 2 billion pesos for family planning programs. "We cannot achieve genuine and sustainable human development if we continue to default in addressing the population problem," Representative Edsel Lagman said in the *Philippine Star*.

However, current Environment Secretary Lito Atienza said at the Asia-Pacific Water Summit that population growth should not be considered part of the country's water problem. But his opposition to family planning is well-known: Advocates in the Philippines recently launched a suit against him for removing all contraceptives from Manila's clinics when he was mayor.

"We must not leave things to fatal luck when we can develop the tools to prevent harm," said President Arroyo at the launch of the UNDP's report on water scarcity. That's an encouraging attitude, but without focused efforts to improve degraded resources and reduce popu-

lation growth, the Filipino philosophy "Bahala na"—roughly equivalent to "que sera, sera"—may let the wells run dry.

Sources: GMA News, *Philippine News,* Population Institute, Woodrow Wilson Center, ABS-CBN News/*Philippine Star,* Inter Press Service TerraViva, MSN, Office of the Press Secretary of the Republic of the Philippines

Role players in the Arborlind simulation at the "Population, Health, and Environment: Integrated Development for East Africa" conference in Addis Ababa, Ethiopia, negotiate integrated solutions. (Courtesy Geoff Dabelko)

Role-Playing—For a Serious Purpose

By Gib Clarke, ECSP

December 10, 2007

http://newsecuritybeat.blogspot.com/2007/12/role-playingfor-serious-purpose.html

"The country of Arborlind is in bad shape. It falls in the bottom quarter of countries on the Human Development Index, and much of the majority-rural population lives on $1 a day. In addition, Arborlind is experiencing rapid population growth, and 40 percent of the population is under the age of 15. Deforestation and environmental degradation continue unabated in Arborlind, as families depend on natural resources for their livelihoods, and agriculture is often carried out unsustainably.

Nevertheless, there is hope that Arborlind's natural beauty, impressive landscapes, and unique flora and fauna will translate into an adventure tourism market that will help turn around the country's economy. This is particularly true in Floriana National Park, home not only to unique plants and animals, but also to the indigenous Sedentaire and—for part of the year—Wandran tribes.

The future of Floriana is a topic of much debate in Arborlind. The Conservonly Foundation of California wants to preserve it, but demands that all people be removed and prevented from re-entering. Civil society prioritizes poverty alleviation and livelihood generation, and is also fighting for improving human health and the environment. The private sector wants a positive regulatory environment that allows the tourism and agribusiness industries access to land and water resources. Finally, the government of Arborlind wants to improve the economy and protect the tribes, but more than anything else wants to prevent the conflict between these groups from turning into an embarrassing scene just two months before it hosts soccer's African Cup."

The situation above was presented to health and environment practitioners, policymakers, scholars, and journalists at a recent conference in Addis Ababa, Ethiopia. The participants in the Arborlind simulation—written by ECSP's Geoff Dabelko and Gib Clarke, along with Shewaye Deribe Woldeyohannes of the Ethio Wetlands and Natural Resources Association—switched roles for an afternoon, as they sought solutions to the problems in Arborlind. Wearing different hats—a health minister playing the part of a hotelier, for example—participants reported gaining new perspectives and increased understanding of sustainable development challenges and potential solutions.

The simulation exercise was part of the "Population, Health, and Environment: Integrated Development for East Africa" conference, attended by more than 200 people from Rwanda, Uganda, Tanzania, Kenya, Ethiopia, and 17 other countries. Participants presented real-world solutions to problems very similar to those in Arborlind, explaining how all parties can—and must—come together to address people's multifaceted needs.

I have attended more conferences than I care to remember. But this conference was unique: There was tremendous excitement about the potential of integrated programs to address population, health,

environment, and other challenges in East Africa. There was also a palpable sense of community, as different organizations from different countries realized that there were others like them, also seeking to solve complicated problems with integrated solutions. Hopefully, the lessons learned and the networks formed will sustain the energy that came out of the conference, and lead to an increase in the number and sophistication of integrated programs in East Africa.

Sources: Woodrow Wilson Center, *New Security Beat,* Population Reference Bureau

Discovery of Oil Destabilizing Great Lakes Region

By Rachel Weisshaar, ECSP

November 16, 2007

http://newsecuritybeat.blogspot.com/2007/11/discovery-of-oil-destabilizing-great.html

The unearthing of significant oil reserves in 100-mile long Lake Albert—shared by Uganda and the Democratic Republic of the Congo (DRC)—has already led to violence, and the conflict could easily escalate further. Tullow Oil and Heritage Oil Corporation, which have drilled wells in the lake, recently estimated that it contains at least 1 billion barrels of oil. Uganda and the DRC both want the lion's share of this treasure, and their competing ambitions have already spurred violence in parts of the disputed Uganda-DRC border.

Uganda and the DRC deployed troops in the area once the discovery of oil was reported, and on August 3, 2007, Congolese soldiers attacked one of Heritage Oil's exploratory oil barges, killing a British contractor working for the company. The Ugandan army retaliated, killing a Congolese soldier. Following the incident, Congolese President Joseph Kabila and Ugandan President Yoweri Museveni met in Tanzania and agreed to pull back their troops. But later in September, an incident between the two sides resulted in the deaths of six civilians.

The discovery of oil is causing outright violence in the region, but it is also harming local communities' health and livelihoods. Rukwanzi Island, located in Lake Albert and claimed by both countries, was partially evacuated earlier this week by DRC authorities due to a cholera outbreak. Oil-related security concerns prevented health workers from treating patients effectively, so DRC police evacuated children and the elderly—two particularly vulnerable populations.

Congolese and Ugandan fishermen who depend on Lake Albert for their livelihoods have been caught up in the hostilities. A Ugandan fisherman told Reuters, "Congolese soldiers have started arresting us, saying we are in their waters. It's not safe to fish anymore." Congolese soldiers arrest Ugandan fishermen, and Ugandan police retaliate by arresting Congolese fishermen, making fishing a dangerous and less-profitable enterprise.

The discovery of oil—and the destabilization it can bring—could also involve other Great Lakes countries. Vangold Resources Ltd. recently signed an agreement with the Rwandan government to conduct an extensive geophysical study of a portion of Rwanda's East Kivu Graben basin, which, structurally, is the southern extension of the Albertine basin. The survey will be completed—and its results released—within 18 months.

Africa's Great Lakes region—particularly the DRC—has a history of natural resource-driven conflict. Trade out of the DRC in gold, diamonds, copper, cobalt, coltan (used in cell phones), and timber has contributed to devastating internal violence, corruption, and poverty, as well as conflict with other countries. We can only hope that the discovery of oil in Lake Albert does not follow the same path.

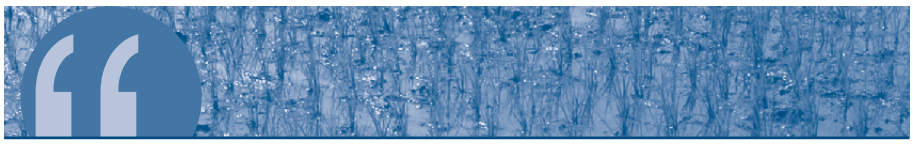
Sources: Tullow Oil, Heritage Oil Corporation, Business Daily Africa, IRIN News, Vangold Resources Ltd., All Africa, Woodrow Wilson Center

A Word of Caution on Climate Change and "Refugees"

By Geoff Dabelko, ECSP

July 18, 2007

http://newsecuritybeat.blogspot.com/2007/07/word-of-caution-on-climate-change-and.html



The key to getting climate on the table as a principal driver of migration is to carefully trace how it interacts with the many other factors that cause people to move.

Scholars, policy analysts, and even military officers are breaking down climate change's impacts into what they hope are more manageable topics for examination. The migration that climate change could cause is one such topic. For instance, the Center for American Progress recently posted a piece entitled "Climate Refugees: Global Warming Will Spur Migration." The International Peace Academy analyzed "Climate Change and Conflict: The Migration Link" in a May 2007 *Coping With Crisis* working paper. Climate change-induced migration also figured prominently in the security perspective offered by the CNA Corporation's Military Advisory Board in its *National Security and the Threat of Climate Change*.

In many respects, these pieces are careful in their discussion of the topic. But allow me a few words of caution on climate change and migration based on what we learned from a series of programs on the topic in the late 1990s here at the Environmental Change and Security Program.

First, the use of the term "refugee" is convenient but problematic. In order to achieve refugee status, people must be fleeing persecution or violence and must cross a national border. Countries are then obligated by international law to admit them, provide shelter, and so forth. Notably, then, the definition of "refugee" is based on political boundaries and has nothing to offer internally displaced persons. It also does nothing for people who are "pulled" for economic reasons or "pushed" for environmental reasons. Because not all people displaced by climate change will be fleeing violence or cross a national border, it is critical to avoid referring to them as refugees if one wants to be taken seriously by the United Nations, lawyers, academics, and governments. Governments in particular have a fairly strong interest in keeping the definition narrow because of the obligations they have to refugees. For this reason, the "knee-jerk" reaction for most of them will be to resist granting refugee status to a new large group of people.

The second problem is that the motivations for migration are many, and distinguishing between economic pulls and environmental pushes is very difficult. A farmer suffering from prolonged drought is both pushed to move from his land and pulled to an urban area or to more fertile ground by the promise of greater economic opportunity. This is self-evident, of course, but when the situation is reduced to "climate migrants" versus "economic migrants," the response from climate change skeptics will always be: "They are just economic refugees." One can easily see this classification problem with Mexican migrants coming across the border to the United States to work. Are they climate migrants because their homes have experienced prolonged drought that may have been exacerbated by climate change? Or are they economic migrants who are "just coming for our jobs"? The multi-causality of the motivations for moving makes labeling a migrant with any single adjective (political, economic, environmental, climate, etc.) problematic.

The third difficulty—which follows from the challenge of multi-causality—is that it is extraor-

dinarily difficult to develop and defend a methodology for calculating the number of climate migrants. A prominent biologist who spoke at the Wilson Center in the mid-1990s claimed that the number of climate refugees could be in the tens of millions. When one participant asked him how he determined who was in and who was out of his total, his response was basically: I read a lot of reports and this is my best guess. Naturally, the air went out of the room, and we might as well have ended the meeting right then. This is the danger of asserting that there are millions more climate migrants than political refugees from war or persecution. For starters, is the number of climate migrants being compared with the legal category of refugees, or does the comparison also factor in the millions of war-induced internally displaced persons? If this kind of comparative analysis isn't done carefully, some will believe that the climate change migration numbers have been exaggerated by a flawed methodology. This issue will then be in danger of being unfairly marginalized.

I say "unfairly" because I believe climate change could have a tremendous effect on human migration. Even though we cannot parse out a single cause, climate changes are still critical pushes that cause people to move. Migration—like conflict and other social phenomena—is by definition multi-causal. Just as "environmental conflict" theories that privileged environmental scarcity as the explanation for civil conflict were criticized, so too is the "climate refugee" argument open to critique.

The most nuanced conflict work now being done focuses on how environmental scarcity or abundance can exacerbate more proximate causes of conflict such as ethnic difference or relative deprivation. Likewise, the key to getting climate on the table as a principal driver of migration is to carefully trace how it interacts with the many other factors that cause people to move.

Climate and migration links may prove to be effective arguments in the larger political discussions of climate change mitigation. That is clearly the way the Center for American Progress article is deploying them. Raising migration (and its potentially negative impacts on security, which the CNA report highlights) as an additional cost of inaction may be effective in some political settings. But to maintain a focus on improving the lives of people on the ground, it is crucial to translate this larger theoretical and political argument into a variety of specific interventions. Then, when donors, NGOs, and host governments become convinced of the challenges presented by climate and security linkages, there will be a full menu of responses to offer and implement.

Sources: Center for American Progress, International Peace Academy, CNA Corporation, Woodrow Wilson Center

NEW PUBLICATIONS

Beyond Disasters: Creating Opportunities for Peace

By Michael Renner and Zoë Chafe
Washington, DC: Worldwatch Institute, 2007. 56 pages.

Reviewed by NICHOLA D. MINOTT

Nichola Minott is a doctoral candidate at the Fletcher School of Law and Diplomacy at Tufts University. She is currently working on issues pertaining to international environment and resource policy studies, international security studies, and conflict resolution and negotiations. She holds a Master of Arts in Law and Diplomacy from the Fletcher School.

Beyond Disasters: Creating Opportunities for Peace examines the impact of natural disasters on conflicts by analyzing the 2004 Indian Ocean tsunami and the 2005 earthquake in Kashmir. Co-authors Michael Renner and Zoë Chafe focus on two main themes: the impact of disasters on ongoing conflicts, and how the responses to disasters can change the dynamics of these conflicts. These significant and timely questions can help us understand how post-disaster interventions could contribute to conflict resolution and facilitate cooperation among warring factions by helping address the deeper socio-economic and political barriers within the conflict itself.

The report analyzes three cases: Aceh (Indonesia), Sri Lanka, and Kashmir. All three regions were plagued by civil unrest and conflict, and all suffered a sudden and devastating environmental disaster that, for a time, pacified the conflicts. However, the post-disaster outcomes varied, ranging from a peace agreement to further violence and bloodshed. The authors provide important lessons and policy recommendations, demonstrating how governments, the military, disaster relief agencies, and civil society can play positive (and negative) roles in conflict resolution.

The first part of *Beyond Disasters* presents a general overview of natural disasters as they relate to "human impacts on the natural environment" (p. 7). Renner and Chafe observe that the severity of disasters is increasing as growing socio-economic inequalities push development and settlements into vulnerable areas, exposing more people to the full impact of these events. From the melting ice caps to Hurricane Katrina to the 2004 tsunami, the world has borne witness to the destructive power of environmental disasters.

Renner and Chafe describe how human population growth is forcing more people into fragile and vulnerable ecosystems, thus increasing the number of people likely to be affected by disasters. By 2008, "for the first time ever, more people will live in cities than rural areas" (p. 10). Despite advanced early warning systems—which have decreased fatalities—the number of people affected by disasters has risen 10 percent over the past two decades (p. 9).

A disaster can weaken areas already in conflict, further depleting the country's economic resources and making it more difficult to recover from violence.

Environmental degradation is contributing to the severity of the damage; for instance, short-sighted economic policies led Louisiana to lose more than a quarter of its wetlands, eliminating a natural buffer zone that could have minimized the devastation. In addition, the authors cite studies by the Intergovernmental Panel on Climate Change indicating that Earth's temperature has increased over the past century, along with the severity of storms and other undesirable climate-related phenomena.

Yet what ultimately matters is the timeliness and adequacy of relief programs and the ability of the affected society to absorb the shock and rebound. Typically, the poor and disenfranchised bear the brunt of the disaster. For instance, the U.S. federal response to Hurricane Katrina was clearly lacking, and the poor of New Orleans and the Gulf Coast are still suffering the results years later.

Post-disaster relief and economic aid can be used as a political tool: Aid to the victims of disasters can distort the economy by increasing inflation, the cost of living, and competition for jobs, and by leading to unequal compensation and conflicts over resettlement. A disaster can weaken areas already in conflict, further depleting the country's economic resources and making it more difficult to recover from violence. For example, Pakistan's slow response to the 1970 floods in present-day Bangladesh eventually led to the region to push for independence in December 1971. Likewise, Nicaraguan dictator Anastasio Somoza's inefficient response to the devastating 1972 earthquake and embezzlement of international reconstruction aid weakened his support base and eventually led to his overthrow (p. 17).

Renner and Chafe delve deeper into the cases of Aceh, Sri Lanka, and Kashmir. When the tsunami hit the Indonesian province of Aceh on December 26, 2004, the province had been under martial law since the failure of official peace talks in May 2003. The tsunami forced the parties involved to shift their focus from fighting to working together to distribute relief to the population in need. Most importantly, it brought international attention to the conflict. While unofficial peace talks were already in progress prior to the disaster, the post-tsunami involvement of the international community—specifically, the European Union-led Aceh Monitoring Mission—helped increase the commitment to peace. Yet Aceh's post-tsunami peace could be easily endangered by continued inequalities in resource distribution and aid.

Unlike Aceh, post-tsunami Sri Lanka descended into further violence. The unequal distribution of post-disaster aid helped increase tensions between government forces and the Tamil rebels. Other factors contributed to this particular outcome, including the Sinhala nationalists, who viewed any type of negotiated settlement as a ploy for a separate state. Peace was not politically expedient for the Sinhala-led government; studies showed that the majority-Sinhala population did not want to end the conflict. And the international community sided with the government by labeling the Tamils "terrorists."

Unlike the civil wars in Aceh and Sri Lanka, the third case study focuses on an interstate conflict. After a massive earthquake on October 8, 2005, India and Pakistan took tentative steps toward thawing relations, allowing some travel across the "Line of Control," which demarcates their respective geographical claims in the disputed territory of Kashmir. The two governments also agreed to facilitate cross-border relief efforts. Tensions decreased and trade increased; however, both sides remained cautious. While the earthquake mobilized civil society, biased aid distribution stirred discontent and conflict. The authors conclude that the nations missed an opportunity to build peace; neither side seemed ready to make the necessary commitments to truly engage in dialogue.

In the final chapter, "Creating Future Opportunities for Peace," the authors provide an excellent synthesis of the three cases. Their clear and concise summary of the key aspects of post-disaster engagement in each case provides steps the international community can

take to help further peacebuilding in these fragile environments. They argue that donor nations should leverage aid to build peace; humanitarian groups should be more sensitive to the realities of politics and conflict; and other actors responding to natural disasters should make a concerted effort to restore the environment (p. 42).

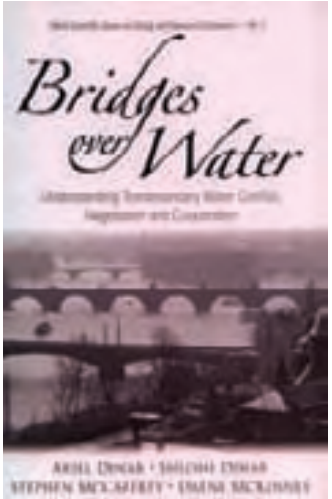
Though the analysis is compelling, the report's main weakness lies in its vague policy recommendations. It is hardly news that environmental restoration will minimize the damage caused by disasters, or that "building trust and reconciliation" is pivotal to increasing cooperation among disputants. Most of the recommendations are aspirational and do not address the hard realities on the ground. The real issue is the lack of political will on the part of governments, the international community, and powerful elites to make the sacrifices necessary to mitigate inequalities that are further exacerbated by natural disasters. How does one create incentives for powerful groups to implement the policies needed to minimize the impact of future disasters? This specific recommendation is lacking—which is what the policy realm most needs.

Overall, I found the report a fascinating examination of how three regions addressed the devastating impact of a natural disaster and their divergent outcomes on conflict. Renner and Chafe conclude that the tsunami and earthquake created opportunities and challenges that warrant further study to determine why the effects on the conflicts were so varied. *Beyond Disasters* is a timely call for more in-depth research on disaster relief and its links to conflict mitigation.

Bridges Over Water: Understanding Transboundary Water Conflict, Negotiation and Cooperation

By Ariel Dinar, Shlomi Dinar, Stephen McCaffrey, and Daene McKinney
Singapore: World Scientific, 2007. 468 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.*

Two riparian states, A and B, share one transboundary aquifer. The countries' economies are based only on the aquifer's water: They pump water to sell it on the international market as bottled water. Assume, for simplicity's sake, that the capacity of the international market to consume water is limited, and the price per unit of water is a decreasing function of the quantity. Unfortunately, A and B decide how much water to pump without consulting the other. Each country then pumps as much water as possible and sells it on the market; however, this floods the international market and lowers the price for water. If the two countries instead communicated and cooperated, they could maintain high market prices for water and realize the highest joint payoff.

With this transboundary groundwater version of the famous "prisoner's dilemma," the authors of *Bridges Over Water: Understanding Transboundary Water Conflict, Negotiation and Cooperation* demonstrate how a transboundary water situation could be expressed using

game theory. Game theory is only one of the approaches employed by this textbook, which seeks to introduce the multidisciplinary facets of freshwater management by considering its political, economic, legal, environmental, and hydrological aspects. Representing a cross-section of disciplines, authors Ariel Dinar, Shlomi Dinar, Stephen McCaffrey, and Daene McKinney seek to fill the void by producing a single textbook that covers all aspects of negotiations over transboundary water, an ever-expanding field of study. As such, this book is a very valuable undertaking.

Bridges Over Water is aimed at graduate students in economics, engineering, water law, and international relations, as well as practitioners of water resource management, international water law, and water policies. The book provides a theoretical background on water resources and international water law, as well as quantitative approaches to analyzing transboundary water problems, such as river basin modeling and game theory. The annex offers detailed case studies of particular transboundary river basins, lakes, and aquifers, together with the treaties governing cooperation. A CD-ROM accompanying the book includes modeling software, which can be used to model the fictive Lara River basin or other basins.

The book starts with an introduction to global water issues, sectoral use patterns, and water scarcity concepts. After taking stock of the world's transboundary river basins, the first chapter points out that conflict is not the prevailing outcome of riparian states' divergent interests. However, it does not provide a clear overview of common conflicts of interests in transboundary water basins, such as issues of water quality, quantity, and flow timing, or divergent water management priorities such as hydropower, flood control, or wetland protection. This overview would have provided readers with a clear understanding of the most common problems. Also, the authors should have devoted some time to introducing the concept of integrated water resources management as the recognized approach to water management and as a basis for understanding the environmental, social, and political processes taking place in river basins. Instead, it is not mentioned until later in the book, and its principles, including participatory approaches and institutional aspects, are under-represented in the following chapters.

Bridges Over Water continues with an overview of the literature on conflict, negotiation, and cooperation over shared waters. While this chapter concisely summarizes the literature from various fields of research—which is very useful for anyone doing research in the field—it will probably not be easy for a new student to understand due to its brevity and the multitude of concepts it introduces.

The third and fourth chapters introduce the main principles of international water law and cooperation, providing examples of their application in transboundary basins around the world. The prisoner's dilemma presented above sets the stage for two chapters on cooperative game theory and how it can be used to analyze the cooperative or competitive behavior of riparians in transboundary basins. A fictive example of a basin shared by three riparians is interesting to read in spite of the many formulas that might scare away those less familiar with economics. Together with the knowledge gained in the chapter on "The Use of River Basin Modeling as a Tool to Assess Conflict and Potential Cooperation," game theory is used to analyze the hypothetical but illustrative example of the Lara River basin in the book's annex. The modeling software provided with the book allows students to track cooperation's likely effects on the basin.

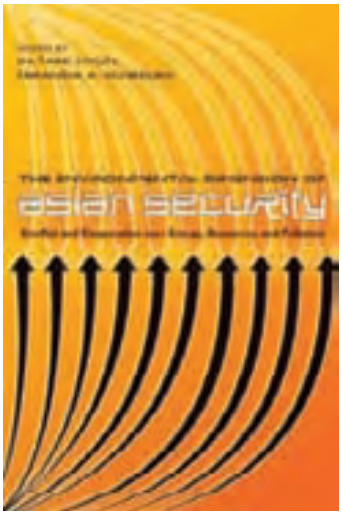
The seventh chapter discusses conflict and cooperation over water from the perspective of international relations and negotiations, including examples illustrating how the relative power and geography of riparians—as well as conflict history, domestic policy, and external actors—can influence the balance between conflict and cooperation. This chapter creates a more realistic picture of the various social and political factors that may sidetrack economically rational behavior. The following chapters, "Overview of

Selected International Water Treaties in Their Geographic and Political Contexts" and "Global Analysis of International Water Agreements," provide a comprehensive overview of how international freshwater agreements can help settle water disputes, including a useful set of questions for analyzing freshwater agreements. Together with the basin case study template in Annex 2, these questions will hopefully contribute to an increasing pool of comparable case study analyses.

Preparing a textbook on such an interdisciplinary topic and targeting graduate students from multiple disciplines is ambitious. *Bridges Over Water* must be complemented by a knowledgeable teacher who can give additional explanations and adjust the contents to the students' level. The book would have benefited from a clearer introduction to the major problems and issues of dispute; moreover, more attention could have been devoted to the actual problems water managers face on the ground—especially in developing countries, where many of the transboundary rivers of the world are located—such as the lack of data, the difficulty of enforcing agreements, and limited institutional capacities to maintain river basin organizations. Overall, however, *Bridges Over Water* is a valuable contribution that helps fill the need for comprehensive textbooks on transboundary water conflict, negotiation, and cooperation.

The Environmental Dimension of Asian Security: Conflict and Cooperation Over Energy, Resources, and Pollution

Edited by In-Taek Hyun and Miranda A. Schreurs
Washington, DC: United States Institute of Peace, 2007. 362 pages.



Reviewed by PAUL G. HARRIS

Paul G. Harris is the director of the Environmental Studies Program and a professor in the Department of Political Science at Lingnan University, Hong Kong. His most recent book is *Europe and Global Climate Change: Politics, Foreign Policy and Regional Cooperation* (Edward Elgar, 2007).

The Environmental Dimension of Asian Security: Conflict and Cooperation Over Energy, Resources, and Pollution describes and analyzes connections among resources, the environment, and security in Northeast Asia. Despite its title, this book is not about all of Asia, but instead focuses on its eastern, and particularly its northeastern, states and regions. Given the number of people living in this part of the world, its prodigious pollution, its unprecedented economic growth—and the dominant "growth-first, clean-up-pollution-later model of development" (p. 254)—as well as the region's growing appetite for natural resources, anyone interested in environmental security should be concerned about the issues addressed in this book.

Broadly speaking, the book examines the practice of and prospects for regional environmental cooperation, and provides readers with detailed descriptions and analyses of several prominent environmental and resource issues. The 12 consistently informative chapters include three devoted to defining environmental security and identifying regional institutions that address environmental and resource problems; three focused on energy security, including one dedicated to radioactive waste; two on the marine environment and water security; and chapters on food security, Korea, and NGOs.

Most chapters are very detailed, well-written, and freestanding, allowing readers to easily skip

to those chapters of greatest interest. Like several other chapters, Mika Mervio's chapter on water and human security in Northeast Asia (pp. 143-164) is one of the best available analyses of the topic; it is worth the price of the book by itself. Similarly, Young-Ja Bae's chapter is one of the best English-language summaries of radioactive waste management in East Asia (pp. 63-88).

The Environmental Dimension of Asian Security is very useful for its detailed—and sobering—discussion of the poor prospects for establishing robust and effective regional regimes to address environmental changes and resource scarcities. A proliferation of weak and overlapping environmental regimes have had little beneficial impact on environmental problems. Despite the region's profound environmental challenges, longstanding animosities and mistrust prevent effective cooperation on environmental and non-environmental threats alike. As Geun Lee argues, "broader identity relations among the countries in Northeast Asia are perhaps the most important factors affecting the formation of environmental security complexes," alongside "legacies of past colonial history and rivalries between Japan and China" (p. 38) and what Miranda Schreurs appropriately refers to as "still considerable mutual suspicion and tension in the region" (p. 256). Alas, the book does not detail how to surmount these obstacles; we need additional work devoted to overcoming historical suspicions as a prelude to ensuring environmental security in the region.

Some issues are largely absent or given minimal attention. For example, climate change garners very little attention, despite possibly posing the greatest threat to environmental security—and even territorial integrity (due, for example, to sea-level rise)—across much of East Asia. Although Anna Brettell devotes five pages (pp. 104-109) of her very informative chapter on energy security to climate change, it could have been featured much more prominently throughout the book. I would have liked a chapter devoted to climate change and its security implications for East Asia, or at least more discussion of the global security implications of China's escalating greenhouse gas emissions.

Regular readers of the *ECSP Report* most likely agree that there are important connections between environmental change and security, but may disagree on the exact definition of environmental security. The editors of *The Environmental Dimension of Asian Security* define "environment" and "environmental security" very broadly, which helps explain the heavy emphasis on energy security, which was a major topic of study well before environmental security gained prominence in the lexicon of international affairs.

As Miranda Schreurs notes in her fine chapter on regional cooperation to protect marine environments, "Environmental security has been defined in different and, at times, competing ways" (p. 11). This book is no exception, but the contributors at least move us closer to finding a common definition. In the introduction by In-Taek Hyun and Sung-han Kim, environmental security is defined "in terms of the source of environmental problems, the scope and impacts of those problems, and the level of threat perceived by states or nations in relation to the problems" (p. 9). In other words, if environmental change is not *perceived* at all, it is not a threat to security—or at least it is unlikely to lead to interstate conflict. However, I wonder about the dangers of *unperceived* environmental changes; this definition would exclude climate change until the perception of its threat spread beyond a few scientists. Hyun and Kim propose one way around this problem: Empower "the community of experts working on the environment" (p. 14). When this community has sufficiently stimulated people's perceptions of environmental risk, "preventive" regional cooperation to avert environmental conflict becomes possible (pp. 13-14).

I question whether all of the issues in this book fall under the rubric of environmental security. For example, Esook Yoon, Seunghwan Lee, and Fengshi Wu's excellent chapter on environmental NGOs and their growing (but still constrained) impact on environmental policy refers to environmental security at the outset, but then assumes

that all environmental issues are problems of environmental security. Some chapters refer to the usual environmental security concerns, such as transboundary pollution and competition for natural resources, while others are dedicated to issues that are not necessarily primarily environmental, such as energy and food security. If states seeking energy security adopt energy sources (e.g., coal, nuclear power) that can have major environmental impacts, energy becomes a matter of environmental security, according to Elizabeth Economy, who addresses energy security in her superb chapter on the reality of and potential for a regional "environmental security complex" (see pp. 242-246). But if conflicts over energy arise due to greater demand for it—as Sangsun Shim and Miranda Schreurs discuss in their chapters on dependence on Middle Eastern oil, the 1970s oil shocks, and the nuclear crisis on the Korean Peninsula—this seems to stretch the term "environmental security" far enough to include everything somehow related to the environment.

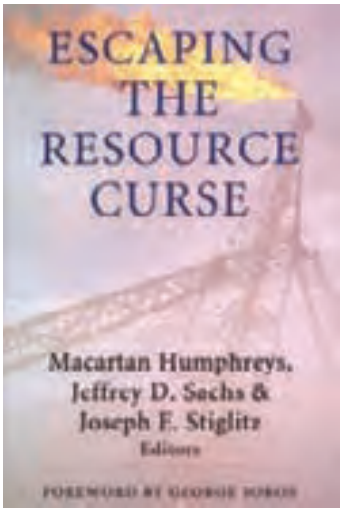
Similarly, if food shortages arise not from environmental change but from incompetent government economic policies—as is arguably the case in North Korea, which gets much attention in this book (e.g., pp. 165-184)—to call them environmental security issues again stretches the definition. Just as energy security is not always environmental security (hence references in the book to "environmental and energy security"), food security is not always environmental security.

As Geun Lee points out, definitions of environmental security proliferate, and "[a]ttempts to conceptualize [it] have created considerable conceptual and policy confusion" (p. 23). Lee defines environmental security as "the state's protection of the people from environmental threats and threats of an environmental origin" (p. 25), and further refines it by explaining that "[e]nvironmental problems become security issues when the state is forced to respond with extraordinary measures" (p. 25). This definition seems to exclude preventive cooperation described in other chapters, and suggests that something is not a threat to security until the problem becomes quite severe. One might argue that environmental problems are nearly always dealt with through *ordinary* policy means, which would leave most of the issues examined in the book beyond the scope of environmental security. In short, most of the time "environment" and "environmental security" are interchangeable in this book, which explores the environmental dimensions of Northeast Asian international relations and domestic politics just as much as (or more than, in the case of some chapters) security.

The book has a few irksome characteristics: The misleading title suggests that the book is about all of Asia and not just East (and especially Northeast) Asia. Secondly, all of the notes are at the end of the book, but there are no headers to indicate the chapters and page numbers, making reading the notes extraordinarily annoying and time consuming. At first glance, the extremely detailed index—40 pages of small type—is a godsend for those who might use the book for reference. However, it is not reasonably organized; entries for North Korea alone take up two and one-half pages of the index—but not one of these is for "security." In fact, the general index entry for "security" refers to only three pages of the entire book. Some of the material is out of date, and much of the recent literature on environmental politics and diplomacy in Northeast Asia is not cited. Nevertheless, the book's selected but extensive bibliography, which provides a substantial sampling of publications on environmental policy in the region up to a few years ago, is still of great benefit.

Despite the omissions, *The Environmental Dimension of Asian Security* is an excellent book that should be part of any institutional or personal library on environmental change. Readers will not find better descriptions of some of the most important environmental challenges facing Northeast Asia, especially those interested in energy, the marine environment, water, food, the role of NGOs, and regional environmental cooperation. However, readers hoping to find a handy, all-encompassing definition of environmental security will be disappointed—though that is a problem that most of the literature has yet to solve.

Despite the region's profound environmental challenges, longstanding animosities and mistrust prevent effective cooperation on environmental and non-environmental threats alike.



Escaping the Resource Curse

Edited by Macartan Humphreys, Jeffrey D. Sachs, and Joseph E. Stiglitz
New York: Columbia University Press, 2007. 408 pages.

Reviewed by KAYSIE BROWN

Kaysie Brown is a deputy director of the Program on International Institutions and Global Governance at the Council on Foreign Relations. She has written on topics such as the legacies of war economies in post-conflict peacebuilding; business and international crimes; security and development in the South Pacific; and the rule of law in peace operations. Her recent publications include: *Greater than the Sum of Its Parts? Assessing "Whole of Government" Approaches to Fragile States* (International Peace Institute, 2007), and *The Pentagon and Global Development: Making Sense of the DoD's Expanding Role* (CGD, 2007).

With oil prices becoming increasingly volatile, demand for energy rising in China and India, and instability affecting key oil producers in the Middle East, *Escaping the Resource Curse* surfs the wave of interest in new oil-producing countries. Unfortunately, these producers—such as Sudan and several West African countries—are often better known for poverty, civil conflict, and political instability than for sound resource management policies. For these countries, absorbing substantial new capital inflows without succumbing to civil disorder or corruption poses quite a challenge—one made even more difficult by the set of economic and political distortions collectively known as the "resource curse." This edited volume, in which leading academics, practitioners, and policymakers focus on overcoming the problems faced by states endowed with large oil and gas reserves, could not have come at a better time.

The resource curse is commonly defined as the tendency of states with large reserves of natural resources, such as oil or diamonds, to be less developed than similar states lacking such resources. Jeffrey D. Sachs, in his foreword, attributes the curse to three overlapping phenomena: so-called "Dutch disease," where resource-related capital inflows inflate currency values and crowd out unrelated industries like manufacturing and agriculture; the volatility of commodity prices; and the negative effects of resource abundance on fragile political institutions, which Sachs identifies as a consequence of states' ability to raise funds without taxation. Indeed, below-ground wealth in the developing world is found in countries such as Nigeria, Iraq, and Angola—known more for corruption, conflict, human rights abuses, and authoritarian rule than for good governance or successful poverty-reduction programs.

According to Sachs, "it has now been recognized that transparency and accountability are the remedies" for overcoming the curse. While this sentiment may overstate the extent to which a cure has been found, transparency and accountability are undoubtedly key ingredients, and the editors emphasize them throughout the analysis and policy recommendations that make up the book. In keeping with their focus on solutions, *Escaping the Resource Curse* aims to offer countries that are potentially affected by the curse a framework for effectively managing their oil and gas reserves.

The editors' ambition is undeniable: In their attempt to present a workable solution to one of the more bedeviling economic challenges of recent years, they marry theory and practice while addressing the curse's socio-economic and political effects. Arranged like a handbook for policymakers in oil-rich states, the volume is divided into three sections. Part I comprises

particularly interesting (but somewhat cumbersome) chapters discussing ways for governments to improve their negotiations with oil corporations, since greater understanding of these processes—from deciding how and when to privatize, to evaluating the economic conditions of an oil contract, to selecting a skilled negotiator—can create more transparency in the oil industry itself.

The next two sections discuss the ways in which natural resource management plays a key role in resource-rich countries once the taps have been turned on and oil revenue has started to pour into a country. Part II focuses on the technical aspects of managing the macroeconomy. It includes a chapter written by Sachs that unpacks how and when oil wealth can have deleterious effects on other economic sectors, and recommends specific ways to reverse this powerful trend. Macartan Humphreys and Martin Sandbu contribute an engaging and well-written chapter on using natural resource funds to push for better management of petroleum revenues in the developing world. These funds, which often employ escrow accounts, typically limit governments' discretion to spend oil money, attempting to conserve and direct the proceeds either by stabilizing oil revenues or by saving a portion for future use. The authors conclude that such funds will be sustainable only if they are accompanied by incentives for political change.

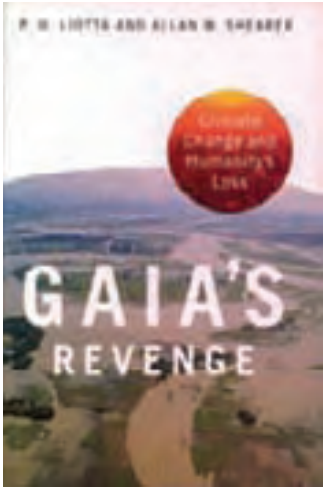
Part III picks up on this theme by focusing on the legal and political dimensions of creating responsible revenue management policies and practices. In one of the only chapters to focus on minerals (as opposed to oil), Michael Ross packs a lot of punch into his examination of the effects of resource wealth distribution. While it is popularly believed that mineral wealth creates wider gaps between the rich and poor than other forms of wealth, he concludes that the evidence is not yet strong enough to confirm this. Given the lack of data, Ross calls on states to focus on creating policies that enable workers to transition from "tradable" sectors such as agriculture and manufacturing to "nontradable sectors" such as services (no doubt easier said than done). His chapter ends with a balanced, thought-provoking, and cautionary discussion of the promises and pitfalls of decentralization as a method of countering regional inequality.

The conclusion, co-authored by the editors, attempts to bring all of the pieces of the resource puzzle together by making 13 recommendations that span its economic, political, technical, and theoretical aspects. Roughly two-thirds of these recommendations target ways oil-rich governments themselves—and by extension their citizens—could reap greater rewards from their resource wealth. The remaining four recommendations concentrate on how the international community could generate greater transparency and accountability in the oil industry. These proposals include setting stricter standards for multinational corporations and creating a worldwide public information office on oil and gas revenues that would build on the current "Publish What You Pay" initiative. One the more interesting recommendations proposes creating a global clearinghouse for all natural resource revenue funds.

While most of the chapters reflect the latest thinking on the resource curse, and a few move that debate forward significantly, the volume as a whole is a mixed bag. *Escaping the Resource Curse* does not live up to its ambitious goal of bringing together many different streams of thought; instead, it is a rather disjointed collection of discussions about economics, the macro-economy, and political and legal issues. The real challenge—and the real need—is to figure out to the ways in which these issues intersect. Also, the book sometimes fails to move beyond well-established debates on the resource curse or to make certain very technical ideas accessible to a more general audience—a definite flaw for a volume targeted at policymakers.

Most importantly, the book seems to give short shrift to some of the most intractable aspects of the resource curse. For example,

the authors do not explain how to convince an oil-rich governmental elite to initiate reform—a necessary prerequisite to negotiating with oil companies and establishing revenue management systems. All too often, they simply assume that the political elite will be virtuous, and thus do not explain how to achieve buy-in. The book also fails to account for China's growing influence, which has transformed the reform landscape, as well as oil-industry nationalization, which has recast the balance of power between oil companies and producing states. While these omissions leave room for further study, *Escaping the Resource Curse* is still an important contribution to a topic that is unlikely to go out of style anytime soon.



Gaia's Revenge: Climate Change and Humanity's Loss

By Peter H. Liotta and Allan W. Shearer
Westport, CT: Praeger, 2007. 194 pages.

Reviewed by DAVID M. CATARIOUS, JR., and RONALD FILADELFO

David M. Catarious, Jr., and **Ronald Filadelfo** work as research analysts at the Center for Naval Analysis (CNA), where they were members of the team that produced the April 2007 report *National Security and the Threat of Climate Change.*

In Gaia's Revenge: Climate Change and Humanity's Loss, Peter Liotta and Allan Shearer argue that scenario analysis can be a useful tool for policymakers searching for the proper response to the impending challenges presented by climate change. Over the course of seven chapters, the authors move from presenting the theoretical underpinnings of scenario development to discussing and critiquing an example of a climate change-focused scenario developed for the Department of Defense. Unfortunately, the discussion is, at times, disjointed and not fully developed. Despite these drawbacks, Gaia's Revenge provides an interesting change of perspective for members of either the environmental or security communities.

By looking only at the title, readers may mistakenly expect to read about the past and future effects of climate change on the planet and human beings in particular. Early in the text, Liotta and Shearer make it clear that this book is not a history of or primer on climate science. In fact, the third paragraph lists everything the book is not supposed to be, concluding that "instead, this book is about the challenges that confront us and finding ways to envision the most effective actions that may best taken" (p. 2).

The authors review the changing definition of security; discuss the impact of different levels of uncertainty on the mindset of decision-makers; and offer a framework for developing and considering climate change-focused scenarios. In describing why these scenarios are of such importance, they state: "We must create representations that allow us to come to terms with [climate change]". *Gaia's Revenge* concludes with a chapter on the current state of the climate change debate in the United States, the difficulty of finding workable solutions, the major issues threatening human security in the coming century, and the need for action at levels other than that of the nation-state.

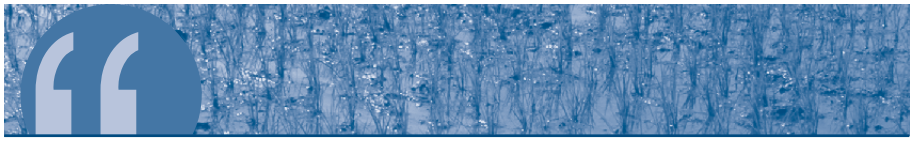
The book's strength is its ability to provoke discussion among policy- and decision-makers on opposite sides of the divide between the traditional security community and the newer

players in the security realm (e.g., the environmental community). By discussing climate change through a security lens, *Gaia's Revenge* could help the traditional security community find a place for environmental issues in its policy portfolio. Conversely, the book can aid the nontraditional security community by providing them with a methodology and framework for considering familiar issues from a new and useful perspective.

The third chapter, "Zombie Concepts and the Boomerang Effect," will be of most interest to both the national security and environmental communities. In it, Liotta and Shearer review human and environmental security and argue that we must broaden the parameters that define national security to include them. They state that since climate change and other "creeping vulnerabilities" differ from direct threats (such as those posed by the Soviet Union during the Cold War), we will not deal with these problems effectively if we continue to approach security concerns from a military-centric perspective. Because creeping vulnerabilities do not have a clear culprit or policy solution, they often fall prey to the "do-nothing" response. Reconsidering the cliché, "If all you have is a hammer, then every problem begins to look like a nail," Liotta and Shearer comment, "It might be more apt to say that when one only has a hammer, the problems that do not look like nails are ignored" (p. 59).

While we believe that the material covered by *Gaia's Revenge* is valuable, several aspects of the book could use improvement. First, the book is mistitled; it has very little to do with the Gaia hypothesis, mentioning it only in passing. The title implies that the book will focus on the impacts of climate change, but the text focuses on constructing scenarios. A more fitting title would help the book find an appropriate audience.

Second, the book's arrangement is awkward. The second chapter critiques the climate change scenario commissioned by the Department of Defense in 2003 (which is included as an appendix to the text). However, this discussion comes too early; it would have better for the authors to discuss the possible frameworks for constructing scenarios and then describe the techniques used in the 2003 scenario. As currently organized, the second chapter seems to distract from the book's main purpose, and stands noticeably apart from the rest of the book.



Since climate change and other "creeping vulnerabilities" differ from direct threats…we will not deal with these problems effectively if we continue to approach security concerns from a military-centric perspective.

More problematically, *Gaia's Revenge* reads like a collection of separate essays sewn together under one cover (as one could ascertain from the copyright acknowledgements). For example, the relevance of the material in the fifth chapter (which covers different types of uncertainty) to the rest of the text is unclear. The concluding chapter contains content useful to students of the debate surrounding climate change, but does not serve as a logical conclusion to the chapters that precede it. The organizational problems, occasional repetition, and dense content help make the text disjointed and confusing in places. Upon reviewing the book as a whole, the connections between the sections become clearer, but *Gaia's Revenge* would have delivered a better experience had the authors taken more time to excise extraneous material and keep the text more tightly focused.

While it is not for the casual reader and suffers from some organizational problems, Liotta and Shearer's *Gaia's Revenge: Climate Change and Humanity's Loss* is a valuable contribution to policymakers and researchers working at the nexus of national, environmental, and human security.

The Global Family Planning Revolution: Three Decades of Population Policies and Programs

Edited by Warren C. Robinson and John A. Ross
Washington, DC: World Bank, 2007. 470 pages
Available online from http://www.worldbank.org

Return of the Population Growth Factor: Its Impact Upon the Millennium Development Goals

By the All Party Parliamentary Group on Population, Development and Reproductive Health (APPG)
London: APPG, January 2007. 69 pages.
Available online from http://www.appg-popdevrh.org.uk

Population Issues in the 21st Century: The Role of the World Bank

By the World Bank
Washington, DC: World Bank, 2007. 70 pages.
Available online from http://www.worldbank.org

Reviewed by GIB CLARKE

Gib Clarke serves as senior program associate for population, health, and environmental issues for the Environmental Change and Security Program and as coordinator of the Wilson Center's Global Health Initiative.

A trio of reports released in 2007—two from the World Bank, one from the UK Parliament—examine the past, present, and future of family planning programs. All three volumes highlight successes and failures; elucidate best practices and lessons learned; and offer recommendations for next steps.

The Global Family Planning Revolution: Three Decades of Population Policies and Programs offers 23 case studies of early national family planning programs, tracing their progress from idea to completion and covering as many as 30 years of successes, failures, and adjustments. Editors Warren C. Robinson and John A. Ross boldly claim that these case studies—all written by key program personnel—comprise a history lesson for the next generation of family planning practitioners. The cases meticulously detail each program's socio-economic, cultural, and political context, and include a full chronology of events. The reader is indeed left with a profound understanding of the family planning movement's birth, struggle to grow, and ultimate success.

The rich history in the case studies is supplemented by a powerful introduction from Steven Sinding, former director general of the International Planned Parenthood Federation. Sinding provides a global context, presenting the key debates (such as the importance of family planning and the best methods for

implementing national programs), critical events and conferences, and influential organizations and individuals that helped shape family planning programs.

In case after case, I was struck by the fact that these programs were truly pioneering, developed with little to no precedent, no models to emulate, and no literature to consult. Due to the lack of precedent, the programs show incredible variation in planning and execution. Some programs were executed with support or direction from the government, while others stayed below the political radar. Some programs worked principally through their health ministry, while others relied on population commissions to coordinate the work of several agencies. Finally, some programs stressed condoms, others promoted intrauterine devices (IUDs), and some changed commodities over time.

Despite their differences, most of the programs were successful, with contraceptive prevalence rates (CPR) increasing and total fertility rates (TFR) declining. The level of success was influenced by the particular methods of implementation, but also seems to be a function of higher socio-economic status, education levels, and the status of women in the country.

Though much can be learned from the cases presented in *The Global Family Planning Revolution*, it falls short in a few areas. First, while the overwhelming majority of the world's high fertility countries are in sub-Saharan Africa, the book includes only two cases from that continent. Second, the authors acknowledge that coercion existed, but downplay its significance too much; the Tunisian chapter, for example, dismisses coercion as "not generalized" (p. 62). For the family planning revolution to be reborn, it must fully own up to its early mistakes.

Whereas *The Global Family Planning Revolution* looks at largely successful programs in the past, the All-Party Parliamentary Group on Population, Development and Reproductive Health focuses on family planning's total exclusion from the United Nations' Millennium Development Goals (MDGs) in its report, *Return of the Population Growth Factor: Its Impact Upon the Millennium Development Goals*. This exclusion is potentially crippling to the family planning movement, as many funding decisions and programmatic priorities are based on the needs identified in the MDGs. Indeed, as the authors note, despite evidence that the unmet need for family planning is high (27 percent of women of reproductive age in sub-Saharan Africa and 16 percent in Southeast Asia) and rising, funding for family planning has not kept pace (p. 15). Rather than decry population's absence and argue for its inclusion as the so-called "Ninth MDG," the authors instead point to evidence—collected in UK parliamentary hearings and submitted briefs—that attaining the MDGs is not possible without addressing population growth.

This accessible and clearly written report is to be praised for its straightforward arguments and easy-to-follow charts. Addressing each MDG in turn, it identifies why continued population growth will make reaching the identified targets more difficult for developing countries. The report concludes with six simple recommendations to donors and the family planning community alike, focusing on removing financial, social, and technical barriers to family planning.

For the most part, the arguments are sound. Reaching the second MDG, achieving universal primary education, will be difficult under any circumstances. Adding in population growth, the authors claim, means that some countries will be "running to stand still"; for example, countries with high population growth need to add two million teachers per year to sustain a teacher-to-student ratio of 40, an already strained educational environment (pp. 21, 29). Success on the third MDG, gender equality and women's empowerment, is not possible until women have the knowledge and means to control their own fertility. Short birth intervals, a frequent component of high birth rates, often contribute to children's poor nutrition, thus making the fourth MDG (reducing childhood mortality) more difficult to achieve. Lack of birth spacing, high-risk pregnancies, and complications from unsafe

abortion can all decrease maternal health, which is the fifth MDG. The world is already facing difficulties with the seventh MDG, ensuring environmental sustainability, and population growth—especially in areas where growing numbers of people are dependent upon limited stores of forests, fish, or other natural resources—makes it harder still.

On the other hand, the claim that population growth—particularly urbanization—has a negative impact on efforts to fight HIV/AIDS and malaria (the sixth MDG) is less convincing. Some experts argue that urbanization instead improves access to health services (UNFPA, 2007). The relationship between population growth and poverty (the first MDG) is the subject of much controversy. *Return of the Population Growth Factor* uses several instances of correlation between rising populations and worsening poverty to make the case for family planning. Other studies are neither as conclusive nor as optimistic; and some point out that the causal chain works both ways: Poverty can lead to higher fertility, as well (Kelley, 1998; National Research Council, 1986; Pritchett, 1997; Simon, 1981).

Population Issues in the 21st Century: The Role of the World Bank picks up where *Return of the Population Growth Factor* leaves off, with an assessment of the importance and relevance of population issues and recommendations for future priorities for the field and for the World Bank in particular. The authors point out that while family planning programs have been tremendously successful, 35 countries (31 of which are in Africa) still have TFRs of five or higher. In some of these countries, the population will double or triple by 2050 unless dramatic steps are taken.

Population and development are intricately linked, and this report identifies synergies at the World Bank, including those within the office of Health, Nutrition and Population, which is well-positioned to tackle the multi-faceted issue of population. The authors focus on equity, both between and within countries, since inequities—whether due to age, ethnicity, education, economic status, or living situation—usually limit access to information and services. Members of disadvantaged groups are often not empowered to negotiate sex or make decisions about their contraceptive use.

Despite the World Bank's confidence in its multi-sectoral approach, the authors are clear about the challenges the Bank faces. First, they point to severe under-funding of population initiatives by donors, developing-country governments, and international organizations (including the Bank itself). Second, developing countries are not prioritizing population—perhaps taking the signal from funders and the MDGs. World Bank strategic plans such as Country Assistance Strategy Reviews and Poverty Reduction Strategy Papers address population only occasionally, and when they do, the policies they include are usually not effective. Finally, the authors ask why Africa has yet to share in the global success of family planning programs. Why is the demand for children so much higher in Africa than anywhere else in the world, despite declines in child mortality? Unlike most other developing countries, people in the majority of African countries list opposition to family planning and health concerns (in addition to wanting more children) as the principal reasons for not using contraception; relatively few women cite lack of access, funds, or knowledge. The authors recommend researching what makes Africa different in these respects, and how programs can be tailored to address these factors.

The Role of the World Bank should be taken with a grain of salt, as the introduction states that its results are "preliminary and unpolished…to encourage discussion and debate" (p. ii). No financial or programmatic commitments are attached to this report. Even so, it is a step in the right direction.

Taken together, these three reports describe the family planning movement, providing a useful history of the factors that have made these programs successful. They also describe a movement in crisis as it grapples with its new status and lower levels of funding. Now that it

is no longer the darling of donors such as the World Bank, USAID, and private foundations, is family planning content to reposition itself and to play the "enabling" role in development that the Parliamentarians describe? Or will it prove its worth once again as a stand-alone intervention?

The Role of the World Bank offers welcome signs that the negative tide that started at the 1984 Mexico City population conference may be beginning to turn. *Return of the Population Growth Factor* cites the inclusion of universal access to reproductive health as a target under the MDG on maternal health as a symbol of progress. But old debates about family planning's relevance and tactics are still evident. To resolve them, the family planning community should continue to document their positive results on social and economic indicators, and to loudly and consistently emphasize the voluntary nature of their programs. As the case studies in *The Global Family Planning Revolution* show, success did not come quickly or easily. The same kind of patience and creativity demonstrated by these programs may well be required if family planning is to achieve a comeback.

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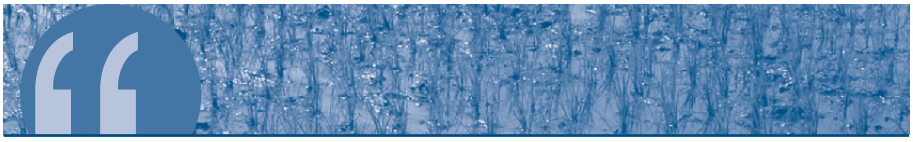
Governance as a Trialogue: Government-Society-Science in Transition

Edited by Anthony R. Turton, Hanlie J. Hattingh, Gillian A. Maree, Dirk J. Roux, Marius Claassen, Wilma F. Strydom
New York: Springer, 2007. 354 pages.

Reviewed by KARIN R. BENCALA

Karin R. Bencala is a water resources planner at the Interstate Commission on the Potomac River Basin. Previously, she was a program assistant with the Environmental Change and Security Program. She has a master's degree in environmental science and management with a focus in political economy of the environment and freshwater management from the Bren School at the University of California, Santa Barbara.

For many years, the field of water management was dominated by large dam construction and the belief that large-scale technological advances could solve the world's water challenges. Today, integrated water resource management (IWRM) is the preferred (though not perfect) model; while it has existed in various forms for decades, only within the past decade has it emerged as the new paradigm for managing water and other resources to ensure a sustainable supply of good-quality water for both people and the environment. Many water managers now grapple with the challenge of developing and implementing IWRM plans that must address the many disparate interests involved.



Water management is truly an issue for everyone, whether you live in a developing or developed country, or in a water-rich or water-scarce region.

Governing water resources is clearly not a simple challenge with a single answer; successful IWRM requires a detailed understanding of a region's water and other natural resources, the ability to make trade-offs between competing human and environmental uses for the water, functioning institutions, and a legitimate government that can see the plans to fruition. In *Governance as a Trialogue: Government-Society-Science in Transition*, Anthony Turton and his co-editors take a hard look at the elements of governance, examining a "trialogue" model that comprises the set of actors and their interactions required to achieve management goals. While this book does not prove the model's effectiveness, its investigation will be beneficial to those attempting to flesh out the requirements for good water governance.

Turton, Hanlie J. Hattingh, Marius Claassen, Dirk J. Roux, and Peter J. Ashton start by offering a new definition of governance: "The process of informed decision-making that enables trade-offs between competing users of a given resource so as to balance protection with beneficial use in such a way as to mitigate conflict, enhance equity, ensure sustainability and hold officials accountable" (p. 12). With this definition in mind, the authors have developed a working model of governance as a trialogue.[1]

Turton and his colleagues conclude that three different actor-clusters in the governance process—government, society, and science—interact with each other in "interfaces." These interfaces are the arenas in which information is transferred between experts and other actors, personal relationships are built, and decisions are made. Each interface is briefly described in an introductory chapter and referred to in a subsequent case study—although the government-society interface receives more attention than the interfaces with science. As Michael E. Campana, Alyssa M. Neir, and Geoffrey T. Klise point out in their chapter on North America, all three groups do not always have the same amount of influence on the process or the end result. Given the importance of these interfaces, it is unfortunate that the editors did not make more of an attempt to map the dynamics of each interface between the three main actor-clusters.

Part 1, "An Overview of Governance," explores ecosystem governance, offering those with limited knowledge a basis from which to assess the trialogue model. Malin Falkenmark's chapter, "Good Ecosystem Governance: Balancing Ecosystems and Social Needs," steps back to explore how the nature of ecosystems determines which resources can be governed and the way in which they should be governed. It succinctly describes water's role in all ecosystems and the essential function it plays in allowing humans to provide for themselves. While the five chapters in this section repeat the definition of some terms and explanations of conceptual topics, they cover important ground: what governance is, what makes for good governance, and how the process plays out at varying scales.

Part 2, "Interrogation of the Trialogue Model," applies the model to ecosystems, but not always specifically to water. The case studies in this section each illustrate at least one of the model's interfaces. However, there is nothing tying the articles together to guide the reader through their evaluations of the model. This section's analysis could be improved by a set of graphics that identifies the interface being investigated and how the arguments either support or challenge the validity of the model.

In her chapter, "Lessons from Changes in Governance of Fire Management: The Ukuvuka

Operation Firestop Campaign," Sandra Fowkes shares lessons from a cooperative fire management project and points out a few of the trialogue model's oversights. First, she observes that each actor-cluster's influence is not necessarily equal and can change depending on the situation. Furthermore, she questions whether or not science should be its own cluster, instead suggesting that it should be viewed as a tool that the other groups use in decision-making. She critiques the model's grouping of everything outside of government or science into one large society cluster, arguing that combining such disparate groups with varying interests and value systems simplifies the true nature of civil society.

The third section of the book, "Cross-cutting Governance Requirements," digs into the mechanics of the interfaces between the actor-clusters. The chapters cover the need for a proper learning environment to educate managers and decision-makers; communication's essential role; and the missing dimension of time. One of the most valuable in the book, this section provides perspectives on the actual process of the interactions that make up governance. Linda Godfrey's chapter, "Ecosystem Governance and the Trialogue Debate: An Overview of the Trialogue Relationship and the Engagement Along Interfaces," delves into the role of science in the trialogue model and explains how governance is affected by both the strength of engagement and the rate at which this engagement plays out between the three groups. These rates are themselves affected by the environment in which these interactions are taking place.

The final chapter of the book revisits the nine hypotheses initially proposed in the introduction, reflects on the chapters' case studies, and proposes a new research agenda. Turton and Hattingh find support for all of the hypotheses, but determine that a few need to be analyzed further. They observe that the names of the actor-clusters are too simplistic and do not reflect the highly complex processes at work. To further the understanding of governance as a process and as a product, they propose to begin describing and cataloguing the forms of the different interfaces. This effort would bolster the model and help others interested in water governance apply these principles to their own situations.

Governance as a Trialogue lacks discussion on leadership and power, two key aspects of governance. While their influence is difficult to quantify and varies drastically between situations, it is difficult to ignore their importance. Leaders are essential for moving processes forward and for helping factions reach consensus. Power dynamics within a region or control over a specific body of water—especially the roles of upstream and downstream users—must be explored if we are to understand how decisions are made.

Good governance is now recognized as a way to tackle the world's water challenges. Water management is truly an issue for everyone, whether you live in a developing or developed country, or in a water-rich or water-scarce region. Many technological fixes exist, and others are continually being developed and improved, but we have lacked innovative strategies for implementation. *Governance as a Trialogue* reflects the growing attention to the problem of inadequate governance that hinders the larger goal of sustainable development. The trialogue model helps the field focus its attention on specific relationships between actors and the actions they take. Whether or not this iteration is comprehensive does not matter as much as the fact that it furthers the discussion on the only sustainable solution to the water crisis.

Note

1. Turton et al. cite Malin Falkenmark as the first person to use the term "trialogue" to describe the interaction between the three actor-clusters, "during a conversation with one of the authors in Stockholm during the 2004 Stockholm Water Symposium" (p. 12).

The Greening of the U.S. Military Environmental Policy, National Security, and Organizational Change

By Robert F. Durant
Washington, DC: Georgetown University Press, 2007. 283 pages.

Reviewed by BRIAN SMITH

Brian D. Smith is currently with a major consulting firm and has served as a contractor to the U.S. Department of Defense, supporting environmental issues, for more than 10 years. He provided technical support to a number of activities sponsored by several of the offices under the leadership of individuals referred to in *The Greening of the U.S. Military.*

The Greening of the U.S. Military: Environmental Policy, National Security, and Organizational Change is a carefully constructed and well-organized account of the regulation of environmental issues within the Department of Defense (DoD) and the armed services. Author Robert F. Durant recounts and analyzes the organizational changes that took place as the defense establishment moved to comply with significant parts of the environmental regulatory framework that governs civil enterprises. Though it looks as far back as the Truman administration, the book focuses on the administrations of George H. W. Bush and Bill Clinton, as well as the early parts of the George W. Bush presidency.

The book is organized around a few broad themes that are carefully threaded through a series of issue-based case studies in self-contained chapters. Each of the chapters examines a particular issue—such as base cleanup or the Military Munitions Response Program—using authoritative secondary sources and official documentation; explains the issue's historical context and relationship to other issues; and then discusses how that issue exemplifies a number of important concepts in the literature on organizational change. As an organizational change textbook built around a well-vetted set of historical cases, the book—which is well-written and easy to follow—succeeds admirably. However, based largely on my experiences and the experiences of my colleagues as contractors working on this process, I found a few important areas where I thought the book was lacking or inaccurate.

Durant provides a generally accurate description of major events and significant movements, including the Republican victory in the 1994 congressional elections and the subsequent retrenchment by the Clinton administration—probably one of the most important reasons for the halting progress made during that time. Efforts by the Clinton administration to reap the post-Cold War "peace dividend" by reducing military budgets—and the pressure from Congress and local interests to quickly deal with facilities targeted for realignment and closure—were key drivers toward realizing the benefits of a more environmentally friendly approach to the management of military facilities and the acquisition of future systems. However, these drivers were also serious impediments to significant and systematic changes in defense culture and the attitudes both within DoD and the armed services toward remediation and restoration efforts. Durant's description lacks a discussion of changes to the force structure itself and the cultural behavior of the military in the face of heightened regulatory pressure and reduced budgets.

Durant suggests that reduced military budgets beginning in the early Clinton administra-

tion led to reductions in the emissions of regulated pollutants and toxic materials; however, he misses some key factors. When the budgets were reduced, existing forces—including active Army divisions, Navy carrier battle groups, and Air Force wings—were also reduced, in order to pay for the research, development, and procurement of the next generation of weapons systems. The military chose to retain and maintain its newer systems and retire older systems that had been in service since Vietnam. While some older systems were preserved, the overall reductions resulted in a younger—and in many cases, less polluting—inventory of systems than those used in Desert Shield and Desert Storm. The military's response to the reduced budget was as important to the reductions in effluents as the budget reduction itself. If, instead, the military had decided to take the cuts across the board or largely out of research and development, the budget reduction might have led to increased emissions, given the increase in operational tempo during this time. The reduction tended to preserve the older, pre-compliance ethic toward regulation of the military's environmental performance. Faced with dealing with a number of significant changes in a short period period of time, the military culture was only able to internalize so many. A discussion of that trade-off and decision process is largely missing from *The Greening of the U.S. Military.*

Durant appears to suggest that the military conspired to systematically obstruct the application of federal environmental regulations to its facilities and operations. He does not adequately address an alternative hypothesis: that the DoD and the armed services were not adequately prepared to assimilate and operationalize these regulations. Much of his analysis is focused on a "post-compliance ethic" as the benchmark for performance, when in reality, reaching a "compliance ethic" would have been a more appropriate threshold. He assumes that the defense establishment, acting as a nearly monolithic whole, should have been prepared to accept the regulatory regime, based in evolving case law, and transparently, rationally, and quickly apply the law to their specific cases. In many cases, such as the munitions rule, the military and the regulatory agencies (notably the Environmental Protection Agency) found themselves in the uncharted territory of managing significant risk to future operations.

Already a conservative organization, when confronted with the possibility (real or perceived) of having its operations curtailed, the military should be granted some leeway for moving slowly and cautiously. The unsettled global strategic environment put enormous pressure on the defense establishment to be prepared to deal with the unexpected, and thus maximize its options. While such slow and cautious movement could be interpreted as obstructionist, I believe that it instead reflects the great difficulty faced by the DoD and the armed services in adjusting their operational cultures in a consistent and uniform fashion.

While Durant correctly identifies senior civil servants as key to successful organizational transformation, he does not address the expanded role of contractors and their impact on organizational change. This role deserves more in-depth discussion, as it is a major feature of current day-to-day operations in the defense establishment. He briefly addresses the firms that develop, build, and support the systems in the defense inventory ("metal benders"). However, the service contractors' role in transformation has greatly increased since the early 1990s, as more technical, analytical, and support work has moved from the government to private industry. Contractors have evolved from providing systems and system-specific support to providing general staff support and specialized technical and analytical support. In many cases, contractors become the organization's institutional knowledge in times of change among the senior leadership.

Finally, I found it curious that despite his extensive research, Durant did not interview

Faced with dealing with a number of significant changes in a short period period of time, the military culture was only able to internalize so many.

many of the key decision-makers referred to in the book. While making extensive use of secondary materials and official documents, he regularly attributes strategies, beliefs, and actions to individuals without having conducted interviews with them; notably, he did not speak to Sherri Goodman and Gary Vest, whose insights I believe would be central to understanding the opportunities for and impediments to greening the U.S. military.

Peace Parks: Conservation and Conflict Resolution

Edited by Saleem H. Ali
Cambridge, MA: MIT Press, 2007. 377 pages.

Reviewed by ROLAIN BOREL

Rolain Borel heads the Department of Environment, Peace, and Security at the University for Peace in Costa Rica, where his main interests and teaching duties lie in the field of environmental conflict resolution.

In *Peace Parks: Conservation and Conflict Resolution*—brilliantly conceived and edited by Saleem H. Ali—31 authors explore the multiple ways in which environmental conservation zones can facilitate the resolution of territorial conflicts. Ali concludes with "a sense of optimism" because the concept of international peace parks (sometimes known as transboundary protected areas or trans-frontier conservation areas) is expanding rapidly (p. 341). The 17 case studies gathered in this volume show that ecological factors have the potential to become instrumental in peacebuilding; however, much of the evidence is not fully conclusive, and the role of peace parks in international affairs remains in the realm of the possible, not of the certain.

Peace Parks is both broad and deep: Part I provides a historical overview and methodological and theoretical perspectives; Part II presents cases of bioregional management and economic development in existing peace parks; and Part III offers several visions of future peace parks. While most chapters are engaging, some contributions are too long and burdened by unnecessary digressions. Although the majority of the authors are from the United States, and only seven are from the Global South, the cases cover a wide geographical range.

Two main factors explain the growing interest in international peace parks. Anne Hammill and Charles Besançon claim it reflects on the growing commitment to bioregionalism and the need to increase the geographic scale of conservation areas beyond national borders. On the other hand, Rosaleen Duffy argues that peace parks are being promoted as a form of global environmental governance, reflecting the wider shifts in global politics from state governance to networks of international organizations. According to Duffy, this governance model is also related to the "extension of neoliberal market-oriented forms of economic management"—i.e., revenues generated by ecotourism (p. 57).

Several of the articles address territorial issues: Raul Lejano stresses that "territoriality has been the subtext for violent conflict" and that it is "ironic that territory is now being turned on its head as an instrument of peace" (p. 41). In their respective chapters, Ali, Michelle Stevens, and Ke Chong Kim point out that international peace parks can act as physical buffers (e.g., the Sierra del Condor between Peru and Ecuador; the demilitarized zone between North and South Korea) or as sites of collab-

orative exchange (e.g., "the informal exchange of information on elephant poaching and security matters" between Tanzania and Mozambique, described by Rolf Baldus et al. on p. 125).

The case of the Kuril Islands, which lie between Japan and Russia, illustrates that territorial problems are unlikely to be "solved by piling up historical arguments based on international law," argues Jason Lambacher, who asserts that a "new approach needs to unsettle nationalist thinking, and defuse historical grievances" as well as offer a "form of political compromise over the sovereignty issue" (p. 269). In fact, it would be irrelevant which country is formally designated the "owner" of the islands, as joint environmental stewardship will require the other's cooperation.

For international peace parks to be effective, certain conditions must be met. Two chapters conclude that post-9/11 "security" measures pose, for example, a definite threat to international peace parks straddling the borders between the United States and Canada or Mexico, in spite of a long history of cooperation between the countries. In less favorable situations, such as the proposed peace park on Afghanistan's borders discussed by Stephan Fuller, the critical security situation poses an almost insurmountable obstacle.

Border areas have their own peculiarities, a life of their own independent from the policies of the respective countries. In their chapter on Liberia, Arthur Blundell and Tyler Christie point out that people on either side are often linked by kinship and marriage, as well as by local trade and culture. Relationships between actors in the immediate vicinity of the border are usually very fluid. In their report on the Selous-Niassa elephant corridor in East Africa, Rolf Baldus and his co-authors state that border inhabitants more frequently share common underdevelopment conditions than conflicts. Therefore, international peace parks must not impose externally designed processes on local stakeholders.

The second section of *Peace Parks* assesses existing international peace parks by identifying their impacts and attempting to separate their effects from other influences. As Maano Ramutsindela and Ali point out, the "peace" in peace parks is not automatic, because it implies a purpose and an impact that are not always present. According to Hammill and Besançon, since peace parks represent the "confluence of several mutually reinforcing interests, namely those of biodiversity conservation, economic development, cultural integrity, and regional peace and security," integral assessment tools—such as the Peace and Conflict Impact Assessment (PCIA)—could be harnessed to measure progress toward such broad objectives (p. 25). The experience of the Great Limpopo Transfrontier Park in southern Africa, discussed by Anna Spenceley and Michael Schoon, illustrates the difficulty of assessing the effectiveness of such complex initiatives in economic, environmental, and equity terms.

Chapter authors attribute many positive impacts to existing peace parks, including:

- Improving the effectiveness of biodiversity conservation in protected areas;
- Symbolizing ongoing cooperation (which, I argue, could also be attributed to joint efforts on many other issues, such as transportation, mail, or the electric grid);
- Changing the symbolic meaning of a border (see chapter by Ramutsindela); and
- Reducing diplomatic tensions through joint monitoring, collaborative research projects, or joint funding proposals (see chapter by Yongyut Trisurat on Indochina).

Several of the authors also identify negative impacts. Ali points out that just as national conservation efforts can create conflicts, so can international peace parks. In addition to exacerbating political inequalities between local communities and state actors, international peace parks can emphasize disparities between countries, note Hammill and Besançon. Aissetou Dramé-Yayé and her co-authors document the

security threat posed by criminals who find the "W" Peace Park in West Africa a safe haven for their activities.

The chapters in the book's third section identify proposed peace parks and their possible benefits. While all the proposals demonstrate potential, the feasibility of several is questionable—not due to lack of resources (as donor interest is high), but because of lack of political interest. This section, while inspiring, is weaker than the first two, because the feasibility of implementing the proposed parks depends heavily on external factors.

A number of chapters discuss the different processes that have been and could be used when creating an international peace park. Some level of decentralization is inherent—and in itself problematic in most developing countries, points out Dramé-Yayé et al. The decision-making capacity of communities and a cooperation model driven by bottom-up technical and situational demands are critically important to the success of such efforts, some authors argue. However, Duffy contends that efforts to decentralize and link up with local communities are just window-dressing for top-down, market-oriented interventions by international bureaucracies.

As mentioned earlier, donors find the international peace parks model attractive and may help galvanize the establishment of shared management between border communities, for which state governments are not well-equipped. For example, Blundell and Christie call on international partners to provide the funds for a proposed international peace park along Liberia's borders in order to promote dialogue between West African countries.

Ali concludes that "environmental cooperation is both a result of conflict mitigation and leading to conflict reduction itself, in a dialectical process of a non-linear and complex series of feedback loops in the conflict de-escalation process" (p. 6). *Peace Parks* is a must-read for anyone interested in transboundary conservation areas.

People on the Move: Reducing the Impacts of Human Migration on Biodiversity

By Judy Oglethorpe, Jenny Ericson, Richard E. Bilsborrow, and Janet Edmond
Washington, DC: World Wildlife Fund & Conservation International Foundation, 2007. 93 pages.

Available online from http://www.panda.org

Reviewed by JAMES D. NATIONS

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People have been migrating from one place to another since the first humans walked out of Africa into an uncertain future. Over the millennia, our movement has become increasingly complicated. Human migration today is both prompted and stymied by factors such as political boundaries, population growth, and environmental damage. As they work to protect Earth's biological diversity, conservation planners and practitioners must increasingly consider the effects of human migration.

In *People on the Move: Reducing the Impacts of Human Migration on Biodiversity*, co-authors Judy Oglethorpe, Jenny Ericson, Richard Bilsborrow, and Janet Edmond point out that "responding to migration is a relatively new concept for the conservation sector" (p. viii). To help focus this

response, this book provides conservation planners and protected area managers with an excellent overview of contemporary human migration, emphasizing its impacts on biodiversity. They stress, however, that they "seek solutions that work for people as well as the environment: for both local residents and, where possible, the migrants themselves" (p. viii).

People on the Move offers a clear, concise discussion of the movement of human populations across landscapes and across international borders. As the authors point out, approximately three million people migrate across international borders each year, and the number of internal migrants may be 100 times as large. The book's survey covers long-recognized factors in migration, such as growing populations and increasing natural disasters, but it also discusses emerging issues, such as globalization, climate change, and the increasing number of civil wars in the last century. Most importantly, the authors provide documented case studies, maps, and graphs, as well as an action plan to improve our understanding of migration and create effective approaches to mitigating its impacts on the biological foundations of human life on Earth. As they indicate, their goal is to prompt "the development of practical tools and new approaches for conservation practitioners in the future" (p. viii).

After defining migration and outlining its potential impacts, the authors dedicate the bulk of the book's chapters to 13 case studies in high-priority natural areas in Africa, Asia, and Latin America. Each case study presents the factors that prompted the migration, the resulting impacts on ecosystems and human populations, and what, if any, attempts were made to alter the outcome. Ten of these cases involved some form of intervention that altered migratory patterns in high-biodiversity environments or mitigated the impact on natural ecosystems and local people. Together, the case studies provide an excellent overview of the complex "push" and "pull" factors that prompt individuals, families, and communities to move from one location to another. The authors look at rural-to-urban, urban-to-rural, and rural-to-rural migration, pointing out that studies of rural-to-rural migration are less prominent in the literature than the other types, despite the fact that it can have the most serious consequences for natural ecosystems.

In a chapter titled "Deciding Whether and How to Intervene," the authors write that no single blueprint can be applied "to prevent migration or avoid its environmental impacts" (p. 25). Rather, interventions must be carefully selected for each situation. This well-constructed chapter reviews interventions that may help conservation planners and protected area managers prevent migration, influence its course, or reduce its adverse impacts on biological diversity and local populations. The text is complemented by a detailed matrix of possible migration interventions—from local to global scales—that considers such factors as areas of origin, areas of destination, armed conflict, policies, and the parties involved.

As the authors point out, *People on the Move* reviews "what's in the tool kit" for confronting human migration in biodiversity-rich areas (p. 29). They acknowledge that "it is too early to draw conclusions about the most effective interventions, because there are few documented examples and little monitoring of outcomes" (p. 55). However, their action plan is designed to remedy these gaps and help counter the ecological problems human migration can cause.

In sum, these nine brief chapters of well-written text present a state-of-the-art guide to human migration for conservation researchers, planners, and practitioners. The book concludes with an illustrated and annotated list of published and online resources in this too-long neglected field. As population growth, climate change, and civil unrest continue, *People on the Move* will help guide our search for viable solutions to the environmental impacts of human migration. The book will be useful to strategic planners and on-the-ground practitioners of biodiversity conservation throughout the world, as well as to researchers seeking to understand the causes and consequences of the increasing movement of human populations in the 21st century.

Political Geography: Special Issue on Climate Change and Conflict

Edited by Ragnhild Nordås and Nils Petter Gleditsch
Volume 26, Issue 6, August 2007.

Reviewed by ELIZABETH L. CHALECKI

Elizabeth L. Chalecki is an adjunct professor in the International Studies program of Boston College. She received her doctorate from the Fletcher School of Law and Diplomacy at Tufts University, for her dissertation, "The CO_2 Will Always Get Through: National Security and Climate Change."

Given that the Nobel Committee awarded its 2007 Peace Prize to former U.S. Vice President Al Gore and the Intergovernmental Panel on Climate Change (IPCC), and that greenhouse gas emissions continue to increase around the globe, practitioners of peace and security will have to familiarize themselves with climatic drivers of conflict. To that end, the journal *Political Geography* has devoted an entire issue to exploring the links between climate change and violent conflict.

In the issue's opening article, "Climate Change and Conflict," Ragnhild Nordås and Nils Petter Gleditsch lament the lack of first-hand, peer-reviewed research on climate and conflict, noting that "statements about security implications have so far largely been based on speculation and questionable sources" (p. 628). They cite some of the recent documents addressing this linkage, including the paper for the Department of Defense's Office of Net Assessment (Schwartz & Randall, 2003), the Center for Naval Analysis' 2007 report written by retired military officers, two German reports (German Ministry of Environment, 2002; WGBU, 2007), and the recent UN Security Council debate (UN, 2007), among others. Nordås and Gleditsch are correct: Much of this literature has not been peer-reviewed, nor was it intended to be. The links between climate change and security are just emerging as fertile ground for both security practitioners and social scientists. Now, however, with world policy attention focused on climate, they rightly point out that these connections cannot be left to tenuous connections in white papers.

Nordås and Gleditsch recommend that future studies of the climate-conflict link should better combine climate models and conflict models, and point out an inconvenient truth about the IPCC reports: They only peripherally address the implications of climate change for security and conflict. Nordås and Gleditsch also maintain that further research on climate and conflict should:

- Differentiate between types of violence driven by climate change, including non-state violence;
- Recognize the capacity of humans to adapt to the positive and negative effects of climate change;
- Take regional variations into account; and
- Focus more on climate change's security implications for the world's poor.

After these common-sense recommendations, Nordås and Gleditsch veer off course with their assumption that the world is becoming more peaceful and that the climate-conflict connection is "self-denying" (p. 635). They point out that conflict models assume that the future will look like the past, and they also note that the "current trend toward a more peaceful world" (a trend measured only since the end of World War II) will not be reversed. However, the climate models, which have been

extensively developed and reviewed, predict the exact opposite: The future will not look like the past. If, as the authors recommend, climate and conflict models should be more tightly coupled, then the climate models must lead the way.

The second article, "Climate Change, Human Security, and Violent Conflict," by Jon Barnett and W. Neil Adger, states that climate change poses risks to human security because "the more people are dependent on climate-sensitive forms of natural capital…the more at risk they are from climate change" (p. 641). However, this sensitivity is mitigated by social and political adaptive capacity, which varies by region and era. In one of their most interesting observations, the authors point out that climate change-driven stresses can have a cascading effect, with failure in one primary production sector causing a downstream industry to slow down, thus leading to a market failure, etc. While intervening variables are rightly identified, this cascade theory is still particularly noteworthy because the independent variable of climate change is the primary driver.

Barnett and Adger's main finding is that climate change will undermine human security in two key ways: by reducing the opportunities people have to provide for themselves and thus constricting their livelihoods; and by eroding state capacity to provide the services that sustain livelihoods and therefore peace. They recommend three paths for future research, which I believe would all help conceptually strengthen the climate-conflict link:

- Assess the relative vulnerability of people's livelihoods to climate change (by region);
- Connect reduced livelihoods with violent conflict (e.g., why do individuals choose violence?); and
- Examine how climate threatens state capacity.

Rafael Reuveny, in "Climate Change-Induced Migration and Violent Conflict," notes that climate-induced migration appears in many climate change-to-violence scenarios. After studying the effects of other environmental problems on migration, he adapts the standard migration literature to the problem of environmental refugees, and argues that populations can respond to environmental changes in one of three ways: by staying and doing nothing; by staying and mitigating the effects; or by leaving the area.

Reuveny examines 38 cases in which environmental factors played a role in migration, from the Dust Bowl in the 1930s United States to modern-day Bangladesh and Brazil. Since less developed countries are more reliant on the natural environment for their livelihoods, they are more vulnerable to the effects of climate change. Environmental factors that "push" people to migrate include degradation of arable land, droughts, deforestation, water scarcity, floods, storms, and famines, all of which are predicted to intensify as the climate changes. Reuveny recognizes that environmental factors do not work in isolation, but argues that they nevertheless contribute significantly to migration episodes. However, "climate refugees" alone do not engender conflict; instead, conflict arises when migrants of a different nationality or ethnicity move quickly or in large numbers into countries that are themselves suffering from limited resources. Of the 38 migration cases Reuveny studied, 19 resulted in conflict.

Reuveny concludes that it will cost more in the long term to do nothing about climate change-induced migration than it would to formulate a policy for addressing the issue. Citing two examples of public policy interventions in major migrations, he concludes that government policy could help mitigate the effects of climate change on conflict. However, he has no specific policy recommendations for developed countries, and warns of high costs without any citations to back up his claims. Despite petering out at the end, Reuveny's article is one of the more straightforward examinations of the links between climate and conflict in the volume.

In "Climate Change, Environmental Degradation, and Armed Conflict," Clionadh Raleigh and Henrik Urdal report on their statistical analysis of three climate change effects:

If, as the authors recommend, climate and conflict models should be more tightly coupled, then the climate models must lead the way.

cropland degradation, freshwater scarcity, and population displacement. They mapped data on these variables over grid squares of 100 km x 100 km across the Earth's surface, and then overlaid intervening variables, including economic and political factors like GDP and polity scores. Raleigh and Urdal stress that more information can be gained by looking at sub-national regions than from national averages, since not all of a country's territory is usually under conflict at once, nor do environmental stressors fall neatly within national boundaries. Hence, local resource scarcity may be a better predictor of conflict than national-level scarcity. Most of their findings underscore the conventional wisdom that environmental stressors are indirect drivers of conflict, but they do find, surprisingly, that "degradation and scarcity variables are uniformly positively and significantly related to conflict" in higher-income countries and less so in lower-income states (pp. 688, 691).

The co-authors recognize that their analysis suffers from one of the key weaknesses of statistically-based conjectures about real world events: The statistical mean often hides substantial regional or temporal variations. Conversely, the exclusion of information about one country or region can make an otherwise significant result statistically insignificant. For example, Raleigh and Urdal determine that omitting data about Russia from one model negates the connection between land degradation, water scarcity, and conflict. Similarly, omitting data about Niger from another model renders the interaction between water scarcity and population growth insignificant. Yet it is not difficult to imagine that, on a very local scale, these drivers would be compelling. Just because a large-N study does not find a statistically significant relationship between two variables across an entire sample does not mean that the relationship might prove different if examined on a case-by-case basis.

The last two articles in the issue focus on Africa. In "Trends and Triggers: Climate, Climate Change, and Civil Conflict in Sub-Saharan Africa," Cullen Hendrix and Sarah Glaser argue that sub-Saharan Africa is especially vulnerable to the conflict-provoking effects of climate change, due to existing inequalities in resource access and distribution. However, Hendrix and Glaser find no significant correlation between rainfall and the onset of civil war, though they do recognize that the country-wide spatial scales they used could mask local hotspots.

In "Environmental Influences on Pastoral Conflict in the Horn of Africa," Patrick Meier, Doug Bond, and Joe Bond cross-reference conflict data gathered from on-the-ground observers in parts of Ethiopia, Kenya, and Uganda with environmental indicators such as vegetation, precipitation, and forage (pasture for grazing) in an attempt to determine whether the latter might serve as possible harbingers of pastoral conflict. They find that environmental drivers are significantly correlated with the incidence of organized pastoral raids, but not with the number of human deaths or the amount of livestock lost.

All these articles conclude that conflict is a complex dependent variable, and that environmental measures of climate change do not provide sufficient explanatory power without taking into account intervening political and economic variables. In addition, most authors lament the incompleteness of the available data sets, which is only to be expected; many countries do not have the inclination or the wherewithal to gather and compile sub-national data sets on environmental variables, and international agencies usually gather data only at the national level.

I have two main concerns with this issue. First, the authors overuse the principle of *ceterus paribus*—all other things being equal. But when are all other things *ever* equal? Such a relationship is a statistical convenience and does not reflect the real world. Attaching too much weight to the existence of a statistical relationship can shut down profitable avenues of inquiry into particular problems, especially if they do not occur on a macro level. If statistical correlation is what Nordås and Gleditsch mean when

they look for "more rigorous analysis," then they could miss the forest for the trees.

Second, these articles generally appear to conflate the ideas of *conflict* and *security*, assuming that if a region or nation is free from conflict, then by definition it must be secure. This assumption is faulty, as a nation does not have to engage in conflict in order to be insecure. The recent and startling data on Arctic ice melt provides a sterling example of an emerging area of insecurity for many circumpolar nations that has not (yet) devolved into conflict, whereas the pastoral conflict that Meier, Bond, and Bond examine does not rise to the level of a national security threat (though they do not claim that it does).

What the scholarly literature on climate and conflict needs now is not more theory or more attempts at statistical correlation, but opportunities to test out the existing theories on a subnational scale. This issue of *Political Geography* has opened the door to an upcoming and important field of research.

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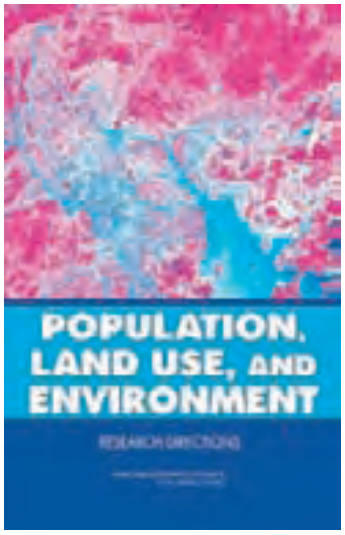
Population, Land Use, and Environment: Research Directions

Edited by Barbara Entwistle and Paul C. Stern
Washington, DC: The National Academies Press, 2005. 321 pages.

Reviewed by DAVID L. CARR



As seen from space, land cover change is far and away the signature imprint of human habitation on the surface of the Earth. What is driving changes in land use and the environment? What is the role of population? In addressing these questions, *Population, Land Use, and Environment* presents the goals and research directions of the National Research Council's (NRC) Panel on New Research on Population and the Environment along with state-of-the-art case studies. The three sections of this volume, edited by Barbara Entwistle and Paul C. Stern, focus on land use or land cover change where population is a prominent driving force.

David Carr of the University of California, Santa Barbara, has served as principal investigator on grants from NASA, the National Institutes of Health, and the National Science Foundation, and has authored more than 50 publications on land use/cover change, protected areas, migration, fertility, and health in the tropics.

The first section reviews the state of knowledge in the field; the second recommends research directions; and the third features 10 papers representing current research trends.

The editors of *Population, Land Use, and Environment* observe that recent investigations have expanded our understanding of the influence of human population on the environment to a host of factors beyond mere population growth, including migration, population density, and age structure. They understate, perhaps, the fact that population variables by themselves rarely emerge as overwhelmingly predominant forces driving land-use change; much more commonly, they operate in tandem with socioeconomic, political, and ecological processes.

More than a decade of research on population-environment interactions has produced studies tracking population, land use, and environment dynamics over several (or more) years in diverse geographic regions. These research projects were catalyzed by targeted land use/cover change funding mechanisms and the emergence of international research networks, including the international Land Use/Land Cover Change Project and its successor, the Global Land Project, hosted by the International Human Dimensions Programme on Global Environmental Change (IHDP) and the International Geosphere-Biosphere Program. Importantly, such research has also been enhanced by technological innovations in remote sensing from space. *Population, Land Use, and Environment* offers seven recommendations for researchers in the field, including:

- Increased coordination;
- The examination of causal relationships among specific component factors of population, land use, and environment;
- The combining of population, land use, and environmental variables;
- The exploration of cross-scale interactions;
- The development of linked datasets;
- Increased efforts to model and quantify causal relationships among population, land use, and environment; and
- The identification of highly effective mechanisms to facilitate interdisciplinary research.

How to increase coordination is hotly debated among human-environment scholars, but such controversy aside, coordination is crucial to achieving holistic policies. The second recommendation may understate the role of other factors, particularly economics. Exploring cross-scale interactions remains a major challenge, which is admirably if incompletely addressed in many of the research papers included in the volume.

Developing linked datasets is a key step in moving beyond disaggregated local case studies and large-scale regional and global efforts informed by unreliable or inconsistent data. For example, we could leverage the comparative advantage of existing large-scale surveys that cover areas of dynamic human-environment interactions such as the USAID-sponsored Demographic and Health Surveys (DHS). Advances in novel techniques such as agent-based modeling, spatial and hierarchical statistical approaches, and the integration of methods from the physical and social sciences have furthered efforts to model causal relationships. Additional synergy is promised by funding mechanisms of the National Science Foundation and the National Institute of Child Health and Human Development, which promote cross-disciplinary research and integrated curricula. The emergence of scholarly networks and institutions such as IHDP and the Population-Environment Research Network (PERN) has also facilitated such interdisciplinary work. As more research funding moves toward climate change mitigation and adaptability, funders should be reminded that land-use change is intimately associated with climate outcomes and their impact on human and natural systems.

The third and final section of *Population, Land Use, and Environment* presents 10 research papers that exemplify recent population and land-use research. Two papers focus on agricultural frontiers with dramatic population and forest cover change. "Population and Environment

in Amazonia: Landscape and Household Dynamics" by Emilio F. Moran, Eduardo S. Brondizio, and Leah K. VanWey challenges the orthodoxy of a linear relationship between population size and deforestation. Survey and land-cover data from multiple years demonstrate non-linear relationships between demographic variables, land use, and primary and secondary forests in the Brazilian Amazon. "Population Change and Landscape Dynamics: The Nang Rong, Thailand, Studies" by Stephen J. Walsh et al. integrates time-series data of remote images with socio-economic and demographic surveys.

Similarly pioneering methods are employed in "Economies, Societies, and Landscapes in Transition: Examples from the Pearl River Delta, China, and the Red River Delta, Vietnam" by Karen C. Seto, which investigates economic and political policies that could impact land-use change and urbanization. Two other studies investigate urban land-use change. "The Urban Ecology of Metropolitan Phoenix: A Laboratory for Interdisciplinary Study" by Charles L. Redman highlights historical, demographic, and socio-economic factors in urbanization and its effects on agricultural land, biodiversity, and human-environment nutrient flows, demonstrating the importance of integrating multiple scales in studies of human and natural systems. "Patterns of Urban Land Use as Assessed by Satellite Imagery: An Application to Cairo, Egypt" by John R. Weeks, Dennis P. Larson, and Debbie L. Fugate develops an "urban index" through the use of remote sensing to pick up signals that can be used to estimate the percent of land surface that is impervious to water (e.g., pavement and buildings).

Two papers examine population-land use relations at the national level in Asia. "A Review of 10 Years of Work on Economic Growth and Population Change in Rural India" by Andrew Foster matches survey data from several thousand households across India between 1971 and 1999 with concomitant satellite data. Research suggests that continued high fertility, population growth, and increased road access accompanied modest but notable reforestation, which was enabled by agricultural intensification and attendant enhancement of agricultural yields. "Global and Case-Based Modeling of Population and Land Use Change" by Gunther Fischer and Brian C. O'Neill asks the important question of how case study research can best inform global analyses, concluding that spatially explicit analyses at a large regional scale are most suitable.

"Beyond Population Size: Examining Intricate Interactions Among Population Structure, Land Use, and Environment in Wolong Nature Reserve, China" by Jianguo Liu et al. addresses a socio-political conundrum facing protected areas throughout the world: How can policies mitigate human impacts on ecological systems? The authors suggest that relocating young people out of the Wolong Nature Reserve is more socially acceptable than relocating other groups, while also being more ecologically effective and economically efficient.

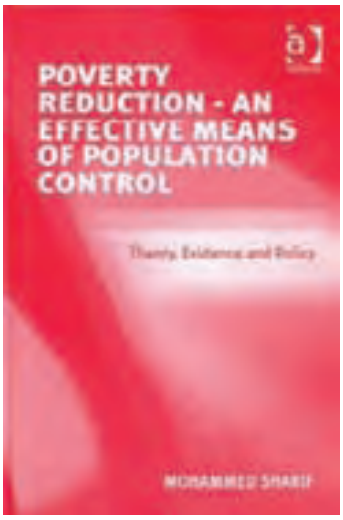
"People, Land Use, and Environment in the Yaqui Valley, Sonora, Mexico" by Pamela Matson et al. presents cross-disciplinary work incorporating land-use and management decisions from the bio-geochemical cycle to farmers' decision-making processes. The project pioneers the combination of various scales and data sources within a vulnerability and resilience framework. Another study on farming systems, "Population and Environment in the U.S. Great Plains" by Myron P. Gutmann et al. uses county-level data to investigate rural population change, cropland expansion, and soil chemistry changes across the U.S. farm belt during the past century.

While each study incorporates elements of the panel's research agenda, they incompletely integrate social and natural sciences across temporal and spatial scales. The studies are all missing a Meso-scale link between local and regional, economic and political land-use policies, proving that the field remains in its infancy. Nevertheless, the editors and researchers demonstrate the previous decade's remarkable progress and fruitful avenues for further growth. Challenges facing future research include linking social and environmental data, collecting

The conversion of forests to agriculture by rural people still leaves the largest human footprint on the Earth's surface, with consequences both injurious and benevolent.

data at the appropriate levels of resolution, comparing data across sites and time, and moving from descriptive studies to those that can reasonably find causality. Moreover, even in light of recent strides, interdisciplinary collaboration remains a challenge.

Climate change has emerged as the topic *du jour*, and human population and land-use interactions are both major causes of greenhouse gases and viable avenues for their reduction. At a time when urbanization and aging have replaced rural population growth and youthful population structures as the most-discussed demographic trends of the new millennium, the demands of rural population change and urban consumption on rural systems remain the primary drivers of land-use change. As research agendas shift towards climate change, human vulnerability, urbanization, and aging, the conversion of forests to agriculture by rural people still leaves the largest human footprint on the Earth's surface, with consequences both injurious and benevolent. The improved understanding of the connection between human activity and environmental concerns demonstrated in *Population, Land Use, and the Environment,* which synthesizes more than a decade of population-land use research, is both exciting and daunting.



Poverty Reduction: An Effective Means of Population Control

By Mohammed Sharif
London: Ashgate, 2007. 184 pages.

Reviewed by RACHEL NUGENT

Rachel Nugent is deputy director of the Center for Global Development's Global Health Programs. She has 25 years of experience as a development economist with the Population Reference Bureau, the Fogarty International Center of the U.S. National Institutes of Health, and the UN Food and Agriculture Organization, among others.

Population policy in developing countries has long been a controversial topic, not least because the vast amount of research devoted to understanding the key determinants of fertility behavior has been inconclusive. In addition, because population raises sensitive and ideological issues, population policy has been mired in political debates. The combination of slow progress in both the research and policy spheres on the role of population growth in development, and what governments should do to influence that growth, has pushed this crucial topic to the sidelines of most of the important development discussions of our day.

Fertility decisions are driven by a complicated set of social, economic, cultural, and technological conditions that are difficult to sort out. Government policy may be a minor influence on the fertility component of population growth, but in some places and times it can be an important agent of change, even simply by changing decisions at the margin. However, it is not easy to measure the impact of government policy—or any other factors—on fertility. Therefore, research has been sometimes contradictory, sometimes inconclusive, and the strongest results are highly site- and program-specific (see, e.g., Robinson & Ross, 2007; Schultz, 1997). In *Poverty Reduction: An Effective Means of Population Control,* Mohammed Sharif attempts to use both theoretical and empirical analysis to take a fresh look at the topic. Unfortunately, the book is contradictory and inconclusive—and certainly not fresh.

Until very recently, policy advocates and researchers seemed to agree that high rates of population growth adversely affect development and poverty, and that family planning policies are important tools of development assistance. Recently, however, attention to international population issues has declined alarmingly, stemming from a combination of complacency (due to lower population growth in some countries) and a paucity of effective tools to meet the ongoing twin challenges of poverty reduction and fertility reduction (Cleland et al., 2006; Gwatkin, Wagstaff, & Yazbeck, 2004).

While fertility has declined in many developing countries, and most of the developed world is experiencing stagnant or declining populations, the "population problem" is not solved. In 16 developing countries, total fertility rates exceed 6.0, and low contraceptive prevalence is a major barrier to development (PRB, 2008). Fifty-five countries have fertility rates of 4.0 and higher. Depending on death rates in those countries, this implies their populations will double in 17 years or less. Finally, in these and other developing countries, the highest fertility rates are generally found among the poorest fifth of the population. Thus, the question of population growth and its relationship to poverty is not inconsequential, leaving substantial room for debate about appropriate policies.

Mohammed Sharif's book takes us back to an earlier time by re-opening the debate about whether family planning is good for poor families. Sharif's main arguments are that high fertility is a rational, often beneficial choice for poor families; and that poverty makes a higher number of children desirable. He concludes that only reductions in poverty will bring down fertility rates among the poor. Sharif examines these assertions empirically, and then derives policy implications from the results.

Researchers on this topic have always faced the challenge of demonstrating a direct causal relationship between poverty and fertility. Many correlates of poverty are also associated with high fertility rates. How do we know what causes what? Sharif devotes much of his book to cross-country regression analysis intended to demonstrate that poor people may be acting rationally in choosing large families. Unfortunately, the analysis presented is largely undermined by the failure of his data and methodology to adequately answer "what causes what?"

Sharif compiled data on poverty and related variables for 83 developing countries from various UN sources to test multiple specifications of his model. With countries as the unit of analysis, he finds that high fertility is not a cause of poverty, and illiteracy is not causally related to contraceptive prevalence. Sharif concludes that the fertility choices of poor developing-country citizens are rational, and argues by implication that international family planning advocates have failed because they have not understood poor families' choices and decision-making processes. Half of Sharif's message is certainly right: Poor people are rational. But they are also extremely constrained in their choices, access to information, and time horizons. As a result, their choices may not be optimal—for themselves or society. Sharif does not explore this possibility, and therefore the book does not advance our knowledge of what policies would be useful in reducing these constraints.

Setting aside the book's polemics attacking international family planning advocates, Sharif's cross-country analysis of the determinants of poverty suffers from measurement and econometric issues—not the least of which is the problem of intervening variables. No reasonable person doubts that poverty affects childbearing decisions in a household, and that numbers of children affect a household's likelihood of being impoverished—but many other variables intervene as well. Researchers have spent years trying to specify models in which fertility choice can be isolated from the variables that determine it. Yet Sharif cites almost none of the voluminous empirical and methodological literature in this area (e.g., Birdsall et al., 2001; Eastwood & Lipton, 1999; Schultz, 2005; Livi-Bacci & De Santis, 2004; Oxford, 1994). And some of his results are anomalous; for example, he finds

The highest fertility rates are generally found among the poorest fifth of the population.

that—in addition to fertility—urbanization and illiteracy have no effect on poverty.

It is difficult to compare Sharif's data and results with other studies. For his preliminary assessment of poor people's rationality, he relies on (quite old) data from the government of Bangladesh, even while noting its poor reliability. He uses the UN Statistics Division for cross-country data, but not the Demographic and Health Surveys for important variables such as unmet need, which is commonly defined as the percentage of women or couples who wish to postpone or avoid pregnancy but who do not use contraception.

What causes high fertility? Sharif calculates both poverty and fertility as functions of independent variables, and then in the second stage estimates each as a function of the predicted value of the other. He finds that fertility and poverty are negatively related. He interprets this finding to mean that children serve as assets for poor, rural families and are therefore desired. Thus, he concludes that high fertility is not only a rational, but also a beneficial choice for poor people.

Sharif acknowledges that family planning programs have increased contraceptive use across the world, but points out that the increase is found largely among the well-off in developing countries, and not among the poor. He faults the UN Population Fund for pushing family planning as the solution to high fertility, and recommends that policymakers focus on other factors that underlie poverty.

In these conclusions, Sharif may be half-right. It is reasonable to push for poverty reduction through a multi-pronged approach that addresses underlying causes. No country or global policymaker would dispute the importance of that goal. But what is the policy lesson from his finding that high fertility reduces poverty? And how much can we rely on that finding? Unfortunately, despite the benefit of a much stronger intellectual foundation to draw upon than earlier population policy researchers, Sharif has not made headway in the analytical challenges of separating determinants of fertility from those of poverty and other related factors.

Most observers would not doubt Sharif's assertions that there are close links between fertility and his selected variables. Where they would part from him is in accepting the anomalous results of his econometric analysis, and in deriving policy conclusions from those inconsistent and confusing relationships. Policymakers will obtain little guidance in finding the road ahead from this backward look at population policy.

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The Price of Neglect: From Resource Conflict to Maoist Insurgency in the Himalayan Kingdom

By Bishnu Raj Upreti
Kathmandu, Nepal: Bhrikuti Academic Publications, 2004. 446 pages.

Reviewed by SALEEM H. ALI

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Although surrounded by conflict over the last two centuries, the Himalayan nation of Nepal has been resilient in the face of colonialism. Even during the British Raj, the feudal rulers of Nepal managed to stay relatively independent by offering diplomatic and military support to the British. However, for 10 years, contemporary Nepal was beset by a civil war that killed 13,000 people. A fragile peace agreement signed in 2006 led to historic elections in April 2008, but the years of internal strife exacted a serious toll on the country.

Overtly, the conflict began as an ideological clash between a monarchic system and a socialist egalitarian ideology influenced by the writings of the Chinese revolutionary leader Mao Zedong. The Maoists differentiate themselves from classical communists because the strength of Nepal's proletariat lies with the rural peasantry rather than the urban working class. While many of the key Maoist leaders are highly educated intellectuals (including Baburam Bhattarai, who was trained in environmental planning), they clearly tapped key grassroots factors that supported the rise of this movement among the masses, such as elite corruption and marginalization of rural areas by the urban economy. It is particularly surprising that the movement gained traction at a time when most other communist states, including China and Vietnam, began tacitly moving towards a capitalist economic model, while retaining centralized political control.

Bishnu Upreti's book, *The Price of Neglect: From Resource Conflict to Maoist Insurgency in the Himalayan Kingdom* was published in 2004, just as the Maoist insurgency was reaching a fever pitch and violence was spreading to the capital, Kathmandu. In the book's first six chapters, Upreti offers an introduction to resource conflict, covering theories of conflict and their application to environmental resources such as water and forests. The author uses examples to demonstrate the importance of resource conflict's cultural context; for example, those seeking to understand the conflict over the Asian Development Bank-funded irrigation project in Andherikhola must consider the Hindu caste system, which is still prevalent in Nepal. South Asian graduate students will find this contextualized introduction to resource conflicts most useful—and affordable too, since the book was published in Nepal.

Upreti uses some rather unusual quotations to highlight the importance of environmental conflicts, such Fidel Castro's speech at the 50th anniversary of the World Health Organization indicting the "blind and uncontrollable laws of the market" for environmental degradation. Yet he misses an opportunity to link such anecdotal references and quotations to the book's larger theme. Analyzing such rhetoric in the context of the Maoists' manifesto would have been illuminating; for example, it is ironic that Upreti

links the rebellion and resource depletion since Mao's own philosophy was deliberately anti-nature (Shapiro, 2001).

The last four chapters of *The Price of Neglect*, which are devoted to analyzing the role of resources in the Maoist conflict, are the most widely marketable. Upreti blames both the land tenure tradition of *guthi,* which is meant to be a trust but is often exploited by the culturally elevated elite, as well as the *panchayat* system of communal governance, for the Maoist uprising. A patriarchal kinship system, *guthi* is an important social structure among the Newar indigenous communities of the Kathmandu valley. Under the more widely practiced *panchyat* governance structure—found throughout South Asia—village elders act as a dispute-resolution council. However, the elders are often not selected by the community but rather through arcane preferences of family lineage.

Unfortunately, Upreti does not explore some of the more interesting environmental aspects of the rebellion. For example, how does forest degradation and overuse of land correlate with the Maoists' regional strengths? Some preliminary research in this regard by Jugal Bhurtel and myself (2009) could have been further developed in this book. Also, a detailed ethnographic analysis would have helped explain the potential linkages between resource degradation and conflict. In addition, Upreti does not address the possibility that the conflict itself has led to immense environmental damage, creating a negative feedback loop (Murphy et al., 2005).

Another missing element is India's perceived influence on Nepal—the diminution of which is an ardent part of the Maoist agenda. By leveraging environmental factors such as water availability and hydropower potential, Nepal could potentially increase its influence on India. This strategic interdependence is not adequately discussed in the book and deserves greater attention by security scholars. As transboundary cooperation becomes even more of an ecological necessity, the shifting balance of power may provide a vent for social movements predicated on inequality.

The book's useful appendices provide a first-hand narration of Maoist demands and government counter-offers, as well as the correspondence between Baburam Bhattarai and the International Crisis Group. However, further analysis of these exchanges in the light of some of the earlier chapters of the book would have provided greater structural continuity to the text.

The Price of Neglect ends on an optimistic note, stating that the Maoist conflict was not related to ethnicity or territorial separatism and hence should be easy to resolve, since it is fundamentally about internal political reform. The 2006 treaty seems to prove Upreti right, but will the Maoist-led government maintain the peace? Despite the shortcomings outlined above, Upreti's book is a worthwhile effort at bringing local flavor to resource conflict discourse in South Asia.

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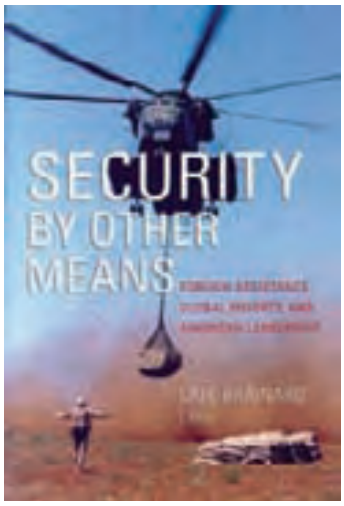
Security By Other Means: Foreign Assistance, Global Poverty, and American Leadership

Edited by Lael Brainard
Washington, DC: The Brookings Institution, 2007. 364 pages.



Reviewed by SEAN PEOPLES

Sean Peoples is a program assistant for the Environmental Change and Security Program (ECSP). His areas of focus include the relationship between demographic dynamics, natural resources, and broader development issues. Prior to joining ECSP, he worked as associate director for Congressional Programs at the Population Resource Center.

The calls for a more effective U.S. foreign assistance framework have been deafening lately. Although official foreign aid has increased substantially over the last five years, its fragmented organization and lack of clear strategic objectives have come under fire. Many prominent voices in the development community argue that substantial reform is needed to effectively alleviate poverty, strengthen security, and increase trade and investment in developing countries (e.g., Sewell, 2007, Sewell & Bencala 2008; Patrick, 2006; Desai, 2007). CARE International's announcement that it would forgo $45 million a year in federal funding is a clear indication that our development strategy is still plagued by significant problems (Dugger, 2007). In *Security By Other Means: Foreign Assistance, Global Poverty, and American Leadership,* several leading scholars—including Steven Radelet, Charles Flickner, and Lael Brainard—offer innovative approaches to reforming U.S. foreign assistance.

This Brookings Institution volume, edited by Lael Brainard, joins the growing chorus of criticism of foreign assistance reform in offering a clear set of first steps. In his 2007 paper for Brookings, Desai recommends consolidating the numerous aid agencies and departmental programs into one cabinet-level department for international development. Stewart Patrick (2006) advocates a complete overhaul of the 1961 Foreign Assistance Act, given the outmoded law's lack of clarity. In another report, Patrick and his former colleagues at the Center for Global Development analyzed President Bush's FY2008 budget and found that "the U.S. continues to devote a relatively small share of its national wealth to alleviate poverty and promote self-sustaining growth in the developing world" (Bazzi, et al. 2007, p.1). In the first chapter of *Security By Other Means*, Brainard explains that aid is not distributed purely on the basis of need: "In dollar terms America continues to place far greater emphasis on bribing non-democratic states than on promoting their democratization" (p. 18).

The inefficiency and fragmentation of the current U.S. foreign aid structure stems from several cumulative factors, including: numerous competing strategic objectives; conflicting mandates among government and non-governmental organizations; congressional and executive branches jockeying for control; and countless organizations with overlapping efforts. Wading through the web of legislation, objectives, and organizations comprising U.S. foreign assistance efforts is a dizzying exercise.

Helping us untangle this confusing web is *Security By Other Means,* which compiles the findings of the Brookings Institution-Center for Strategic and International Studies Task Force on Transforming Foreign Assistance in the 21st Century into a manual of sorts for reforming foreign assistance. Not shying away from the nitty-gritty of foreign assistance policy, the book's contributors delve deep into the current development assistance framework and

recommend valuable reforms, which include: integrating strategic security concerns; formulating clear objectives; understanding recipient country capacities; and building effective partnerships that exploit comparative advantages.

Covering a wide range of development challenges, some chapters offer prescriptions, while others provide case studies or context. In his chapter on strengthening U.S. development assistance, Steven Radelet, a senior fellow at the Center for Global Development, rightfully highlights how poorly U.S. assistance is allocated: "Significant amounts of aid go to middle-income countries that have access to private sector capital and have graduated from other aid programs" (p. 100).

Wading through the web of legislation, objectives, and organizations comprising U.S. foreign assistance efforts is a dizzying exercise.

As food insecurity, violent conflict, and natural disasters wax and wane, humanitarian assistance continues to expand in scale and scope. Steven Hansch's sobering chapter provides a blueprint for the ways the United States can draw on its military's comparative advantages and more effectively coordinate the world's donors for emerging humanitarian needs. Patrick Cronin argues that conflict prevention can be integrated into development reform: "A serious—but realistic—capacity to turn swords into plowshares and prevent conflict before it begins must be a core mission of the U.S. government in the twenty-first century" (p. 161).

Building and strengthening the capacity for creativity within the legislative branch is also critical. Charles Flickner, former staff director for the Appropriations Committee's Subcommittee on Foreign Operations, Export Financing, and Related Programs in the U.S. House of Representatives, acknowledges the resource and cultural challenges (especially congressional committee culture) faced by those in charge of appropriating foreign assistance (p. 238).

Security By Other Means successfully provides a realistic assessment of the challenges to strengthening U.S. leadership in development assistance. The book, along with the Helping to Enhance the Livelihood of People Around the Globe Commission report, encourages a much-needed discourse not only on foreign assistance, but also on U.S. foreign policy in general. The authors provide a timely service for the new presidential administration by taking an integrated look at development challenges and discouraging the use of cookie-cutter approaches to foreign assistance allocation and humanitarian interventions.

Some readers may find *Security By Other Means* lacking. For instance, Capitol Hill staffers would likely find a condensed and more visually stimulating version of greater utility. Policy wonks would benefit from several more case studies peppered within appropriate chapters. Prominently placed case studies strongly support Cronin's chapter on development in conflict contexts, but other chapters did not give cases the same emphasis, even though successful reform requires learning from past mistakes and successes.

At a July 2007 Senate Committee on Foreign Relations hearing on foreign assistance, then-Director of U.S. Foreign Assistance and U.S. Agency for International Development Administrator Henrietta Fore committed to simplifying the process and integrating the numerous spigots of money flowing outward. Brainard and two other leading experts on foreign assistance—Sam Worthington, president and CEO of InterAction, and Radelet—testified that rapid globalization and the inevitable integration of international economies are the impetus for a more unified and harmonized foreign aid structure. A clear consensus emerged from their recommendations: promote local capacity and stakeholder ownership; favor long-term sustainability over short-term political goals; and encourage the consolidation and coordination of the disjointed U.S. foreign assistance structure.

While federal aid flounders, private foundation donations are growing steadily and are poised to overtake official governmental aid. Moreover, businesses have steadily expanded the scope of their humanitarian work. Private

businesses and foundations can avoid much of the bureaucratic red tape that strangles government aid. Nevertheless, an attempt by business interests, private foundations, and federal foreign assistance to integrate their approaches and build technical capacity could only be a positive step.

The authors of *Security By Other Means* successfully parse the many challenges and opportunities posed by U.S. foreign assistance reform. Along with a growing number of critical voices, this book provides a basis for further discussion and action on a number of fronts, including integrating diverse donor funds, seriously deliberating the comparative advantages of various organizations, and streamlining competing foreign assistance mandates.

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The Shape of Things To Come: Why Age Structure Matters to a Safer, More Equitable World

By Elizabeth Leahy, with Robert Engelman, Carolyn Gibb Vogel, Sarah Haddock, and Tod Preston
Washington, DC: Population Action International, 2007. 96 pages.

Available online from http://www.populationaction.org

Reviewed by JOHN F. MAY

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In the past two decades, the study of the world's evolving demographic trends has led population scholars to reassess two classic paradigms. The first paradigm held that the theory of demographic transition—a country's transition from high mortality and fertility to low mortality and fertility—was a set of hypotheses regarding fertility with limited predictive value, and far from a universal model encompassing mortality, fertility, and migration. The second paradigm—held by many economists until quite recently—was that population growth and demographic trends have no impact on (or, at least, are "neutral" to) economic development.

Recent demographic trends appear to have ended the period of intellectual doubt first

opened by the Princeton Project's work on fertility decline in Europe (Coale & Watkins, 1986). Mortality and fertility levels have declined rapidly everywhere except sub-Saharan Africa. These declines have often been followed by transitional migratory movements. The initial intuition that the demographic transition (also known as the demographic "revolution") would reach virtually all the corners of the world has been proven correct (Chesnais, 1992). Moreover, the rapid demographic transition has brought about unexpected results, such as extremely low levels of fertility—far below what is needed to replace the current population—in some countries, as well as the phenomenon of rapid aging, both of which have had far-reaching consequences for the economy.

New research, focused on East Asia, has also challenged the conventional wisdom regarding the independence of demographic trends and economic development. This work has demonstrated that changes in age structure, dependency ratios, and labor force size have contributed to at least one-third of the region's rapid economic growth, dubbed the "Asian miracle" (Birsdall et al., 2001). A country's age structure, population pyramids, and changes in rates of population growth are now being recognized as more important determinants of economic development and poverty reduction than population size itself (and, to some extent, population density). This evidence is encapsulated in a new theory, the "demographic dividend," which emphasizes the gains brought by growing numbers of workers with fewer dependents to support (Lee & Mason, 2006). Indeed, as neatly stated by Nancy Birsdall et al. (2001), researchers have once again returned to the idea that "population matters."

A recent study by Population Action International (PAI), *The Shape of Things To Come: Why Age Structure Matters to a Safer, More Equitable World*, provides a timely illustration of these trends and their current interpretations. The report seeks to demonstrate that in today's changing world, investment in well-designed population and reproductive health policies can play an important role in advancing national and global development. Through their analysis of age structures and population pyramids across the world, Elizabeth Leahy and her co-authors guide the reader through the consequences of the demographic transition and changes in age structures, as well as their implications for economic growth. They also explore the impacts of changing age structures on security, democratic development, governance, vulnerability to civil conflict, and social well-being. These dimensions—examined earlier by PAI in *The Security Demographic* (Cincotta et al., 2003)—are arguably more difficult to analyze.

The first of the report's seven short chapters explains the meaning of population structures. The next four chapters focus on four types of age structures and introduce a new classification system: very young, youthful, transitional, and mature. Seven countries—namely, Germany, Iran, Mexico, Nigeria, Pakistan, South Korea, and Tunisia—provide case studies. *The Shape of Things To Come* also addresses two atypical age structures, caused either by large migratory movements or the HIV/AIDS epidemic, as well as a speculative age structure illustrating a country that moves beyond the demographic transition in approximately 2025. Finally, the last chapter wraps up the authors' findings and considers future demographic possibilities.

The layout is truly stunning: The colors of the graphs and population pyramids skillfully highlight major changes; key messages are prominently displayed; and a very simple but quite powerful graph plots the percentage of the population aged 0-29 (vertical Y-axis) against the percentage of the population aged 60+ (horizontal X-axis). This graph, which recurs throughout the study, enables the reader to immediately position a country on the demographic transition "scale."

The Shape of Things To Come offers a few key findings:

- Very young and youthful age structures are most likely to undermine countries' development and security;
- Countries with a transitional age structure (i.e., in the middle of the demographic tran-

sition) stand to benefit significantly from demographic change;

- Countries with a mature age structure (i.e., 55 percent of the population is above age 30) have generally been more stable, democratic, and highly developed; and
- Societies and governments can influence age structures by enacting policies that support access to family planning and reproductive health services, girls' education, and economic opportunities for women.

The crucial role of policies has been too often overlooked in recent demographic studies; PAI deserves credit for addressing it in a straightforward manner.

The report's original analysis and the wealth of information accompanying it could have been enhanced in a number of ways. First, the authors could have further analyzed the effects of the demographic transition on age structure by using, for example, the concept of the transitional multiplier to compare different transitions. The transitional multiplier is obtained by dividing the total population at the end of the transition by the total population at the beginning of the transition; the same concept can be extended to specific age groups (e.g., Chesnais, 1990; 1992). They could also have further explored top-heavy population pyramids with older age structures. Moreover, they could have highlighted the importance of the time factor, since a country's pace through the demographic transition varies, which can lead to different age structure outcomes (e.g., a stalled fertility decline can have dramatic effects). Addressing these points would have helped *The Shape of Things To Come* to more completely chart demographic changes.

In addition, it is not easy to sort countries into only four age structure categories; allusions to a fifth category, a post-mature age structure, could have been explored further. The issue of *negative* population momentum (as in the case of Russia) also merits more consideration. Finally, the succinct discussion of migratory movements could have been expanded to include the possibility that such movements might cause countries to regress across some age structure categories.

Furthermore, some of the report's bolder claims—namely, the link between population trends and political stability—rest on rather shaky grounds. Although the authors offer the necessary caveats, some of the analytical conclusions presented in the book appear to result from connecting facts that may or may not be causally related. For example, while it is one thing to say that 80 percent of civil conflicts (defined as causing at least 25 deaths) occurred in countries in which 60 percent or more of the population is under age 30, it is another thing altogether to prove statistically that the youthfulness of the population is a cause of civil conflict. Such conclusions depend on the size of the sample, which should be discussed in greater detail. The previous PAI report on the security demographic, to which this report refers, faced similar difficulties.

In conclusion, *The Shape of Things To Come* could have examined several issues in more detail. Despite these omissions, Leahy and her co-authors offer a timely and useful tool to chart the changes in age structures that are brought about by the demographic transition that continues to spread around the world.

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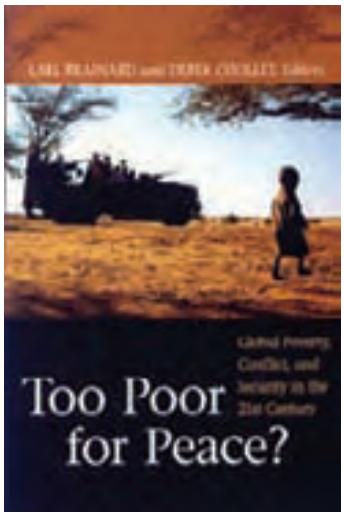


Too Poor for Peace? Global Poverty, Conflict, and Security in the 21st Century

Edited by Lael Brainard and Derek Chollet
Washington, DC: Brookings Institution, 2007. 175 pages.

Reviewed by STEWART PATRICK

Stewart Patrick is a senior fellow and director of the Program on International Institutions and Global Governance at the Council on Foreign Relations (CFR). Prior to joining CFR, he directed the Center for Global Development's project on Weak States and U.S. National Security. His most recent book is *The Best Laid Plans: The Origins of American Multilateralism and the Dawn of the Cold War* (Rowman & Littlefield, 2008).

Five years ago, the World Bank published *Breaking the Conflict Trap*, a groundbreaking book identifying intrastate war as a critical barrier to poverty eradication in a large cohort of developing countries (Collier et al., 2003). *Too Poor for Peace? Global Poverty, Conflict, and Security in the 21st Century* picks up where Paul Collier and his colleagues left off, this time focusing on the impact of poverty on violent conflict. The book's broad thesis is that alleviating poverty in the 21st century is not only a moral but also a security imperative.

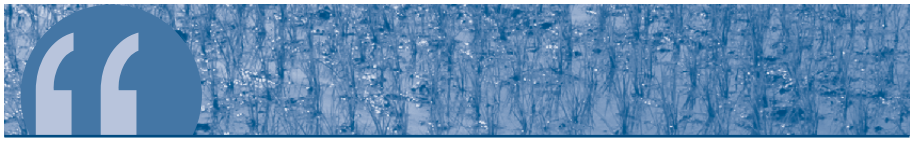
"Extreme poverty literally kills," write editors Lael Brainard and Derek Chollet (p. 3). This claim is true both directly—through hunger, malnutrition, and disease—and indirectly, by leaving poor countries vulnerable to domestic upheaval and war and by generating transnational threats that endanger regional and international security. At the same time, the poverty-insecurity nexus constitutes a "tangled web," with overlapping threads of intervening variables and strands of reverse causality. Poverty and violence reinforce one another, but their specific relationship is mediated by context-specific drivers ranging from resource scarcity to weak institutions to malignant political leadership to demographic trends. Like spiders' webs, each country is unique; there is no single route to prosperity (or penury), no single pathway to peace (or war).

Drawn from an August 2006 conference sponsored by the Aspen Institute, "The Tangled Web: The Poverty-Insecurity Nexus," this slim volume is divided into two parts. The first chapters usefully distill recent findings (including some published elsewhere by the same authors) on specific links between poverty and conflict. The later chapters review, more unevenly, the practical dilemmas confronting external actors seeking to engage poor, conflict-prone states. Throughout, the authors use refreshingly clear, jargon-free prose aimed at an educated policy audience.

Among the most interesting—if controversial—chapters is Susan Rice's examination of the negative implications of developing-country poverty for global (as opposed to human) security. (Full disclosure: Rice and I are frequent collaborators.) She makes an impassioned case that poverty breeds insecurity by undermining the capacity of states to deliver four sets of critical goods: basic physical security, legitimate governance, economic growth, and social welfare. Beyond bringing misery to their inhabitants, such poverty-induced capacity gaps produce negative "spillovers" for regional and global security, in the form of cross-border terrorism, crime, disease, and environmental degradation. She contends that in an age of global threats—from terrorists in Mali to Ebola in the Democratic Republic of the Congo—the United States cannot afford to be indifferent to poverty that weakens state capacity.

Rice's chapter raises as many questions as it answers. The world is full of weak states, of course, and not all generate negative spillovers, much less those of the same type or magnitude, which suggests that intervening mechanisms and situational variables are involved. Are states that suffer from particular types of weakness more susceptible to particular types of threats? And does a state's vulnerability depend on whether its weak performance is a function of the political will of its governing regime, a low level of state capacity, or some combination of the two? Rice is more persuasive in showing the linkage between weak states and transnational spillovers than in demonstrating how poverty is linked to state weakness. Although she qualifies her argument by noting that "though poverty underlies state weakness" the latter is "also a consequence of other capacity deficits," her use of the bloodless term "capacity" gives too short shrift to the role of human agency (and particularly the role of corrupt, misgoverning elites) in generating poor state performance (p. 34).

The role of intervening variables is front and center in Colin Kahl's chapter addressing the links between demography, environment, and civil strife in the developing world, based on his similarly titled book (Kahl, 2006). In recent years, the environmental security literature has been dominated by two diametrically opposed perspectives. The "neo-Malthusian" view attributes civil strife to deprivation brought about by population growth, environmental degradation, and natural resource scarcity. The alternative "resource abundance" thesis contends that an embarrassment of resource riches fuels violence, whether by creating a tempting "honey pot" for factions to fight over or by subsidizing institutional pathologies (the well-known "resource curse"). Kahl considers this dichotomy a false one, noting that scarcity and abundance can occur simultaneously at different levels of analysis. For instance, abundance in one resource can create scarcity in another; different sorts of resources present different risks for developing countries; and the pathologies of scarcity and abundance can occur and interact with one another in the same country over time. Kahl's distinctive contribution is to recognize that resource "scarcity" is not only a natural but also a social phenomenon, reflecting political and economic competition, and that the relationship between demographic and environmental pressures and conflict is mediated by (among other factors) the strength of the state, the nature and quality of its governing institutions, and the identity, solidarity, and power of societal groups.



The poverty-insecurity nexus constitutes a "tangled web," with overlapping threads of intervening variables and strands of reverse causality.

According to Berkeley economist Edward Miguel, "the poverty-violence link is arguably the most robust finding in the growing research literature investigating the causes of civil wars" (p. 51). But is poverty breeding violence, or vice versa? To answer this question, Miguel and two colleagues employ an intriguing natural experiment: They analyze the impact of drought—a purely exogenous economic shock that increases poverty—on state propensity for conflict in Africa. Their findings are startling: "The size of the estimated impact of lagged economic growth on conflict is huge," Miguel writes, with a one percent decline in GDP "increasing the likelihood of civil conflict by more than two percentage points" (pp. 54-56). In contrast, they find little correlation between violent conflict and variables like political repression, democratic freedom, ethnic fragmentation, colonial history, or population density. In sum, "economic factors trump all others in causing African civil conflicts" (p. 55). Miguel suggests that this

robust finding has clear policy implications: Very little foreign aid, he observes, addresses the immediate triggers of civil conflict. Donors could change this by directing a significant proportion of external assistance toward helping countries cope with the sharp income fluctuations created by exogenous shocks, such as poor weather or collapsing commodity prices. By extending such insurance, the international community could help remove support for rebel movements.

The past decade and a half has seen a surge in policy attention to the possible security implications of demographic change—some of it thoughtful (e.g., Cincotta et al., 2003; Urdal & Brunborg, 2005), some of it sensationalized (e.g., Kaplan, 1994). Henrik Urdal's chapter provides a judicious assessment of the potential risks and rewards of "youth bulges" in developing countries. He finds a robust correlation between a country's youth cohort and its propensity for low-intensity conflict. "For each percentage point increase of youth in the adult population," he writes, "the risk of conflict increases by more than four percent" (p. 96). And yet large youth cohorts have the potential to be a blessing rather than a curse, particularly if they precede significantly smaller cohorts. As fertility rates continue to decline (sometimes dramatically) in the coming years, much of the developing world stands to gain a "demographic dividend," in the form of increased economic growth and lower vulnerability to violence.

The second portion of the book is devoted to several policy challenges confronting external actors in violence-prone poor countries. These chapters address working with youth in war-torn countries (Marc Somers); bolstering responsible political leadership where corruption is the norm (Robert Rotberg); operating as private actors in insecure environments (Jane Nelson); and promoting democracy as well as security and basic needs (Jennifer Windsor). Somers observes that young people—and particularly young males—are typically demonized as a national liability, rather than as a potential asset in building a more peaceful future. Ironically, he notes, "it often seems that nations do not know what to do with their own young people while armed groups keep discovering new ways to make use of them" (p. 102). Somers calls for carefully targeted programs that harness the energy and vision of youth and provide young men, in particular, with the opportunity to gain both employment and dignity.

Rotberg looks at the other end of the status hierarchy, highlighting the critical role of leadership in overcoming poverty in Africa. Throwing a bucket of cold water on those who still attribute poverty in developing countries primarily to a lack of foreign aid, he argues that the divergent trajectories of African countries can be explained overwhelmingly by their quality of governance, and specifically the personal leadership qualities of heads of state or government. He pointedly juxtaposes the authoritarian Robert Mugabe, the former independence hero who has managed to drive once-prosperous Zimbabwe into the ground, with visionary leaders like South Africa's Nelson Mandela, Botswana's Festus Mogae, and Senegal's Abdolaye Wade. Rotberg documents a rising demand for good governance in Africa, but what of the supply? Here the answers are less clear. Rotberg claims that sub-Saharan Africa appears to lack "a practical ethic of public service," but he offers few ideas on how outside actors might work with internal reformers to help instill such an ethos.

The book's one shortcoming might be the modesty of its aims and claims. The editors could have been bolder in seeking to break new conceptual ground, to offer more definitive conclusions on the basis of current research, and to address the policy implications of the book's overall findings. Like many conference volumes, it lacks an overarching theoretical framework or conceptual model to lend coherence to its disparate chapters and to explain how the various drivers and intervening variables can and do fit together. The introduction, for instance, includes no trend lines or maps of current levels of poverty or conflict, leaving the reader to wonder if the situation is as dire as described—and which

states, precisely, are entwined in the "nexus." And although the editors review some prominent debates, they generally abstain from evaluating purported causal linkages or proposing steps to cut them. The absence of a conclusion reinforces the depressing sense that the filaments of "the tangled web" will remain tightly knotted.

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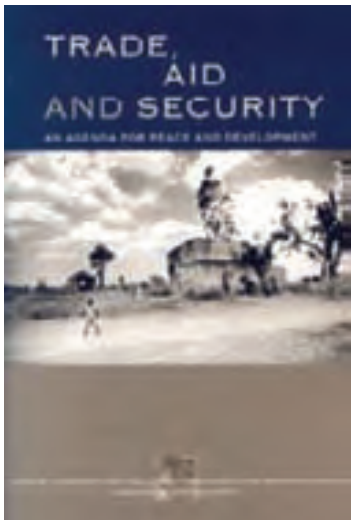
Trade, Aid and Security: An Agenda for Peace and Development

Edited by Oli Brown, Mark Halle, Sonia Pena Moreno, and Sebastian Winkler
London & Sterling, VA: Earthscan, 2007. 204 pages.



Reviewed by JOHN W. SEWELL

John W. Sewell is a senior scholar at the Woodrow Wilson International Center for Scholars, former president of the Overseas Development Council, and author of numerous articles and analyses of globalization, development, and U.S. national interests, including "A Memo to the Next President: Promoting American Interests Through Smarter, More Strategic Global Policies," co-authored by former ECSP Program Assistant Karin Bencala.

Trade, Aid and Security: An Agenda for Peace and Development undertakes the challenging task of assessing the interrelationships between trade and aid, as well as the complex causes of conflict within the poorest countries. Emerging from a four-year research collaboration between the World Conservation Union (IUCN) and the International Institute for Sustainable Development (IISD), this edited volume collects six papers by specialists in trade, aid, conflict, and sustainability. The editors' goal is "to see these objectives—trade, aid, and security—as interlocking components of the overriding objectives of peace and development."

Trade, Aid and Security is, in many ways, a pioneering volume. Starting from the premise that both aid and trade policies have sometimes exacerbated tensions and violent conflict within the poorest countries, it also argues that aid and trade policies can be tools to help prevent existing tensions or conflicts from turning violent. The chapters on designing conflict-sensitive trade policy, building markets for conflict-free goods, promoting conflict-sensitive business in conflicted areas, and managing resources (both natural and aid) are particularly strong. These analyses synthesize a great deal of information and research not normally considered by trade or aid specialists.

My definition of an "interesting" book is one that not only provides new information but also stimulates my own thinking about the broader ramifications of its analyses. The authors in this

volume raise the right issues and shed much light on the choices that will have to be made. But like all good analyses, *Trade, Aid and Security* raises some questions that have not yet been discussed seriously, especially by policymakers.

First, the papers present a seeming paradox: By its very nature, economic, political, and social development requires change—in laws, customs, practices, and even human behavior. But change is inherently conflictual and destabilizing. Some states in the process of development actually "fail"; others, unable to deal with the politics of change, give rise to authoritarian governments.

There is broad agreement that increasing the number of established market democracies benefits both rich and poor countries. Democracies tend to make better political and economic choices than non-democratic governments, and democratic states tend not to start wars with one another. Market economies also generate resources that can be used to invest in people, and market policies eventually promote democratization.

There is one catch, however: These benefits are realized only by *established* market democracies. The history of Europe and the United States in the 19th and 20th centuries should remind policymakers that achieving stable open markets and open societies was neither easy nor automatic. Indeed, the social welfare state was created specifically to deal with the social costs of unfettered market forces. Policymakers ignore the links between political and economic reform in countries where neither is established at their peril.

But if conflict is inherent in development and democratization, then conflict-prevention policies need to be linked to strategies for promoting market reforms and creating strong democratic institutions. Support for domestic institutions that mediate internal conflicts, whether economic or political, is essential, as are institutions that bridge ethnic or geographic divisions within countries, such as democratic institutions and civil society groups.

Governments in many countries are under great pressure, particularly from international financial institutions, to convert inward-oriented, state-dominated economies to more open market-driven approaches, while also strengthening fragile new democracies. Either of these reforms is difficult to carry out under the best of circumstances; reconciling them is even more difficult.

Globalization has made both economic and political reform more difficult. Opening markets creates winners and losers, thereby shifting the distribution of economic power and wealth within developing countries. Various groups—ethnic, religious, political, and regional—have been winners and losers in this process, which has led to tension, contested policies, and increased conflict.

Moreover, globalization has limited the powers available to governments to manage conflicts brought about by economic change. Before globalization, governments could manage the speed of change by closing markets and limiting financial flows. These techniques are no longer effective, as the globalization of financial markets has made capital flows more volatile, and new trade agreements have prohibited many of the measures used previously to protect industries and groups. As a result, it is much harder for governments to redistribute income, assets, and economic power to compensate "losers" in the processes of change.

One thing seems clear: To manage the politics of economic and political change, policymakers and analysts must put a much higher premium on strengthening the institutions that mediate conflicts within countries and on building "constituencies for change" among groups within these countries (Rodrik, 1999).

Many of the authors in *Trade, Aid and Security* emphasize the need to develop conflict-sensitive policies, particularly in aid programs. Indeed, they make a number of useful recommendations for specific policies designed to diminish conflict. But they fail to consider that the development promotion business and the role of the outsider have changed.

Fifty years ago, official development assistance (ODA) volume and policy was dominated

by the United States; the World Bank still was a bank; and the International Monetary Fund (IMF) was focused on the problems of the OECD countries.

Today, the development landscape is much more complex. The Bretton Woods institutions now dominate the development debate, but provide only a small percentage of overall ODA. The situation is further complicated by the proliferation of other bilateral providers and multilateral programs. Each has its own history and constituencies, as well as national and regional interests. International NGOs are now important players in development, both as providers of assistance and as active lobbyists on the global level. And philanthropic foundations, notably the Gates Foundation, have become important providers, while multinational corporations are establishing their own aid programs.

The current reality is that too many ODA providers are trying to do too many things, in too many countries. We need to seriously rethink the ways and instruments though which ODA is provided (e.g., Sewell, 2008).

Those seeking to prevent conflict should also focus on the *politics* of change, both within the poorest countries and within the rich countries. Several chapters in *Trade, Aid and Security* make the case that resources, whether derived from aid flows or legitimate trade, often are not equitably distributed or used to end poverty or promote sustainable development. Instead, they are captured by special interests or steered to political elites. Furthermore, globalization has led to increased income inequalities even within rapidly growing developing countries (as well as between rich and poor countries).

Nigeria's situation is illustrative of the complexity of the trade-aid-security nexus. Rich in natural resources, it is rife with ethnic and religious conflicts and highly political disputes over the distribution of oil and gas revenues. Nigeria does not lack the resources to end poverty and sustain its deteriorating environment, but successive civilian and military regimes have squandered its riches, and recent elected governments have not substantially changed the situation. Outside agencies must consider how best to help those who want to change politics within their own countries.

Politics also have a considerable impact on rich countries' development policies. For instance, U.S. and European agricultural policies are designed to benefit domestic agricultural constituencies, despite the fact that subsidies and lack of market access disadvantage producers in poor countries. In addition, donors still give a great deal of aid to middle- and upper-income developing countries to support political or commercial interests that may be legitimate, but do not promote development. Yet, until recently, those groups trying to reduce conflict have not focused on the trade and aid policies of rich countries.

Finally, *Trade, Aid and Security* would have been strengthened by a chapter on the impact of the international financial system on conflict and sustainable development. As the Asian financial crises of the 1990s demonstrated, poor people and poor countries suffer disproportionately from financial instability. Barry Eichengreen (2004) estimates that financial instability in the 1980s cost Latin American countries at least two percentage points of economic growth. Other analyses show that over the last quarter-century, financial instability has reduced the incomes of developing countries by roughly 25 percent.

Restructuring the international financial system by making existing financial institutions more effective can help dampen the costly instabilities inherent in a globalized financial system that has no effective international regulation. There are, however, political costs to reforming the key multilateral institutions. The decision-making structure of the IMF was originally set up so that both borrowers and lenders had a voice in the fund's policies. But no industrial country has borrowed from it since the mid-1970s; the main borrowers are now poorer developing countries, which have much less voice in the institution's governing board. More adequate representation in international financial institutions for developing countries would increase the legitimacy of

Too many ODA providers are trying to do too many things, in too many countries.

financial policies now seen by the South as being imposed by the North.

There already are many volumes on trade and its impact on poverty and aid policies. Few, however, transcend the compartmentalization of both academic disciplines and policymakers. *Trade, Aid and Security* does, and for this reason alone, it should be read by students and practitioners. The important issues it raises are a welcome contribution to the knowledge of the links connecting aid, trade, and conflict.

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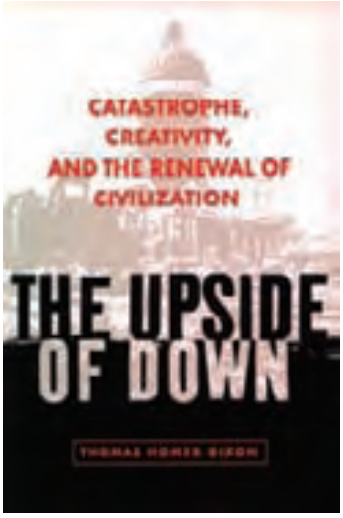


The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization

By Thomas Homer-Dixon
Washington, DC: Island Press, 2006. 448 pages.

Reviewed by RICHARD MATTHEW

Richard A. Matthew is an associate professor of international and environmental politics in the Schools of Social Ecology and Social Science at the University of California at Irvine, and director of the Center for Unconventional Security Affairs (http://www.cusa.uci.edu). Recent books and co-edited volumes include *Reframing the Agenda: The Impact of NGO and Middle Power Cooperation in International Security Policy* (Praeger, 2003) and *Landmines and Human Security: International Relations and War's Hidden Legacy* (SUNY Press, 2004).

University of Toronto Professor Thomas Homer-Dixon writes provocative and influential books on issues of global importance, roaming effortlessly across scholarly disciplines and distilling insights from complex theoretical literatures. His arguments illuminate complicated global processes, describe the problems they generate and their likely trajectories, and identify responses that individuals, businesses, and policymakers should consider.

His latest book, *The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization,* deserves a wide readership and should be the focus of animated discussions in classrooms, journals, and policy arenas around the world.

In his first study, *Environment, Scarcity, and Violence*, Homer-Dixon argued that societies were experiencing natural resource scarcities that, in turn, often triggered or amplified diffuse forms of violent conflict. In his second major work, *The Ingenuity Gap*, he built on his earlier research to argue that contemporary societies often fail to generate or deliver ingenuity where it is needed to solve serious social and environmental problems.

With *The Upside of Down*, he has moved confidently into the realm of grand theory. The book's major arguments—which can be classified into three sets—are concise, accessible, and supported by 100 pages of detailed notes that suggest mastery of an enormous and diverse literature. He integrates ideas in novel ways to generate compelling explanations, but he is also cautious, emphasizing areas of uncertainty and pointing out possible alternative analyses.

The first set of arguments focuses on the converging human-generated processes that Homer-Dixon believes are creating the conditions for catastrophe. He identifies five of these "tectonic stresses":

- Energy stress, due to a general imperative for growth that is now at odds with the declining availability of cheap and easily accessible oil—humankind's major energy source;
- Economic stress, a complex problem that has much to do with income inequality (and has recently moved to the top of the agenda);
- Demographic stress, as populations grow rapidly in areas like the megacities of the developing world, which are hard-pressed to provide their residents with the means to survive and flourish;
- Environmental stress (the focus of Homer-Dixon's earlier work), which worsens as we continue to degrade forests, fisheries, and other natural resources; and
- Climate stress, the result of greenhouse gas emissions that alter the composition of the atmosphere in ways that have dramatic, alarming, and often unpredictable impacts across the planet.

Not only are these stresses interconnected in ways that augment their lethality, but their current and potential impact on humankind is further enhanced by technologies that deepen and expand connectivity, and that give small groups and individuals unprecedented power that can be exercised toward good or bad ends.

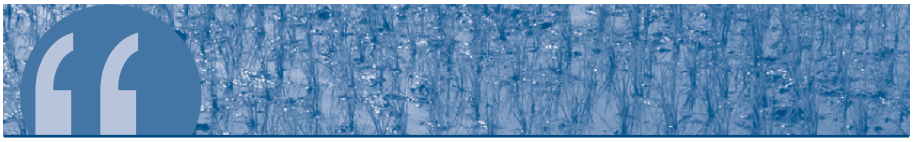
Anyone familiar with contemporary literature on global change will recognize these stresses, as they have all received considerable attention in recent years. But Homer-Dixon has an exceptional talent for pulling familiar ideas together in a lucid, sensible, and authoritative manner, building a worldview that is compelling and easy to grasp.

The second elegant set of arguments places these contemporary stressors and multipliers in a more general theory of social breakdown and renewal, amply illustrated with discussions of the collapse of the Roman Empire, the genesis of the 1906 San Francisco fire, and many other examples. Homer-Dixon asks the reader to think of societies in terms of their energy requirements. Initially, easy access to cheap energy (such as oil fields) can enable rapid growth. But if, over time, the society remains committed to growth, it inevitably will have to draw energy from further afield and at a much higher cost. As the Energy Return on Investment (EROI) deteriorates, the society will discover that it is overextended, dependent, and vulnerable to breakdown.

Homer-Dixon then introduces ecologist C.S. Holling's (2002) "panarchy" theory, which describes the life cycle of an ecosystem in terms of growth, collapse, regeneration, and a new phase of growth. Complex systems from forests to human societies do not develop to some optimal size and then maintain themselves, argues Holling; instead, they grow too large and become rigid and vulnerable to external shocks. When the day of reckoning arrives, they disintegrate, creating the opportunity for a renaissance.

Homer-Dixon applies this cycle to the present day, arguing that human societies, which have internalized the particularly aggressive imperative of growth known as capitalism, are doing whatever they can to maintain a high rate of economic growth. Unfortunately, they are doing this in the context of the multipliers and stressors—including the looming end of cheap oil—discussed earlier, a situation he regards as grave and untenable.

Finally, Homer-Dixon argues that the political realm is ignoring the tensions between a culture of economic growth and a world of growing stresses. When societies experience a catastrophic problem, whether it is 9/11 or Hurricane Katrina, governments do not propose policies that tackle deeper causes of vulnerability. Short time frames, special interests, and cognitive commitments are powerful constraints on political innovation, and so political elites spend billions of tax dollars trying desperately to maintain the status quo. In short, we are in dire straits.



21st century societies are poised to break down, and the breakdowns may be shockingly fast, painful, and interconnected—"synchronous failures."

The third set of arguments in *The Upside of Down* examines what we can and should do today. While Homer-Dixon has included some caveats about predicting the future, the thrust of his first two arguments is that 21st century societies are poised to break down, and the breakdowns may be shockingly fast, painful, and interconnected—"synchronous failures." We can take steps that might mitigate some of these breakdowns; we can position ourselves to weather them; and we can take advantage of the opportunities to build new institutions and values that emerge after breakdowns occur. But avoiding them altogether is not a scenario Homer-Dixon explores.

Nonetheless, *The Upside of Down* ends on a positive note. The key words for the closing set of arguments, especially "catagenesis" and "prospective mind," suggest that we need to be ready to rebuild. We already have been given opportunities to rebuild—for example, after 9/11 and after Katrina—and we have largely failed. Now we need to take advantage of each opportunity that presents itself because the breakdowns are likely to increase in frequency and scale, and it is becoming very clear that it is futile to try to preserve the status quo.

The arguments at the end of the book are not as rich in details as those in the earlier sections, and I think many readers would welcome an expanded set of conclusions. However, the broad contours are quite clear: We need to understand what is going on, pull our heads out of the sand, and cultivate—as individuals and communities—the capacity to navigate a world that contains much uncertainty. We can do this by being open to new ideas, by innovating in every area of human activity, by experimenting with new practices and institutions, and by avoiding the appeals of extremists who promise easy solutions—(e.g., let the market solve it)—to very complicated problems. We need also to oppose the knee-jerk responses of governments—which are so profoundly compromised by special interests—to deny deep problems, and to over-invest in maintaining systems and processes that are at odds with the set of stresses reshaping the global environment. And we need to interrogate the growth of capitalism and ask ourselves whether the benefits still warrant the costs of this value system.

The Upside of Down is not a perfect book; it does not discuss the burgeoning networks of social entrepreneurs who are tackling global challenges from the roots up by drawing people from all sectors of society into vibrant transnational communities committed to creating social value. I think Homer-Dixon may be right: Leviathan is, in large measure, the beached artifact of modern politics. In its day, the modern state achieved much, but even the world's only superpower now finds itself unable to revise a health care system that is wildly inefficient or reform a tax code than no one understands, let alone apply its vast resources to a challenge like climate change. And yet, even in the United States, the very heartland of capitalism and big government, there is a dynamic world growing outside the Beltway, and it is the site of new values, clever experiments, endless innovations, and a refreshing commitment to redefining the good life. Even though *The Upside of Down* is not perfect, it is very good; it will garner well-deserved awards and stimulate much-needed debate.

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ON THE RECORD @ THE WILSON CENTER

Green is hot now. This is the teachable moment. When we talk about nature this time around—now that the public is paying attention—we should get beyond charismatic megafauna and talk about the value of ecosystems to human survival.

Jonathan Lash, World Resources Institute, May 7, 2007

Natural resource-based institutions…are critical for conflict mitigation, especially in areas where there is a high dependence by the local or the rural dwellers on natural resources. **Masego Madzwamuse, World Conservation Union—IUCN, February 28, 2008**

It is not wonky to say that demographics is fundamental to development—it's right.

Amy Coen, Population Action International, October 2, 2007

People…need to cut trees for charcoal, and once they sell charcoal they get school fees, or they buy their food or they buy their medicines. Now, if you tell them, 'Don't cut trees,' then what next? It's like telling Americans 'don't drive.' **Emmanuel Mtiti, Jane Goodall Institute, May 8, 2008**

The fight against poverty is not just one that we care greatly about for moral reasons…It is also one that we care a great deal about because of the intimate linkages between poverty and the drivers of poverty, and fundamental insecurity that in some cases can metastasize into conflict.

Lael Brainard, Brookings Institution, October 5, 2007

We must never forget that international family planning is a huge success story. The trouble is, we've forgotten about it. **John Cleland, London School of Hygiene & Tropical Medicine, September 12, 2007**

Where do terrorists go? They go to weak places where governance is weak and society is weak. If the stress of climate change on these weak societies causes some of them to collapse, it opens a window for terrorists. **General Paul J. Kern, U.S. Army (Ret.), May 14, 2007**

Population-related policies are not going to produce any immediately discernable effect on emissions… [But] climate change is a big problem, and this would appear to be an opportunity. **Brian O'Neill, National Center for Atmospheric Research, February 20, 2008**

When women are better able to manage their childbearing, they may be able to better manage natural resources. Empowerment of women should have environmental gains.

Lori Hunter, University of Colorado—Boulder, March 13, 2008

If we recognize environmental issues as a factor in regional stability, we can use them to build confidence and communication between countries that may already be struggling over territory. Or we can leave these issues untended until they become issues in elements of conflict such as we have seen in Kenya.

Kent Butts, U.S. Army War College, March 4, 2008

We integrate wildlife conservation and public health, which is interdependent in and around protected areas in Africa. We feel that this is more of a cost-effective way to prevent uncontrolled disease transmission between people, wildlife, and livestock. **Gladys Kalema-Zikusoka, Conservation Through Public Health, May 8, 2008**

Environment is neither necessary nor sufficient to trigger conflict. The environment matters, but only under certain conditions, and therefore we should study those conditions. **Colin Kahl, Georgetown University, October 5, 2007**

We always say that we don't fund problems, we fund solutions to problems, and what makes family planning…unique, I think, is that it's the solution to a whole array of problems. **Scott Radloff, U.S. Agency for International Development, December 5, 2007**

Our bottom line is that climate change is a threat to national security and now is the time to take sensible action, to integrate it into national security frameworks, and to build the necessary capacity and resilience to address it responsibly in the future.

Sherri Goodman, Center for Naval Analysis Corporation, May 14, 2007

We at the Center will continue to place a high priority on searching for ways to make our environment part of the solution, not simply a problem to be managed.

Lee H. Hamilton, Woodrow Wilson Center, April 3, 2007

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Cover Photos: An Indian security forces soldier stands guard on a street in Srinagar, 15 January 2008, as an Indian Kashmiri vegetable vendor looks on (Credit: TAUSEEF MUSTAFA/AFP/Getty Images).

This report is made possible by the generous support of the American people through the United States Agency for International Development's (USAID) Office of Population and Reproductive Health. The contents are the responsibility of the Woodrow Wilson International Center for Scholars and do not necessarily reflect the views of USAID or the United States Government. Views expressed in this report are not necessarily those of the Center's staff, fellows, trustees, advisory groups, or any individuals or programs that provide assistance to the Center.

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ISBN: 0-9745919-4-7