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Early Signs of Decline

While progress continues on many fronts, disturbing signs of decline are beginning to emerge. In the early years of this new millennium, United Nations demographers stunned the world when they announced that the average life expectancy in 38 AIDS-afflicted countries in sub-Saharan Africa had fallen to only 45 years, 10 years below what it would have been in the absence of AIDS.¹

For the first time in the modern era, life expectancy, a seminal indicator of development, has dropped for a large segment of humanity. This failure of leadership to curb the spread of the virus in dozens of countries is quite literally reversing the march of progress. Is this breakdown of the political system an anomaly? Or is it an early sign that the complexity of emerging problems is overwhelming weaker national governments?

Troubles are not limited to Africa. In Russia, life expectancy for males has fallen to 59 years, down from some 64 years in 1990. In China, with dangerously high pollution levels, more people are dying from cancer than any other disease. The United States, with a highly productive economy but a troubled society, now has 960,000 farmers and 2 million prison

inmates—more than twice as many people in jail as live on the land.²

The gap between rich and poor grows ever wider, putting more stress on the international system. Differences in life expectancy are wider than ever, with people in Botswana and Swaziland living on average less than 40 years and those in Japan and Sweden living 80 years or more. One reason for the wide gap in life expectancy is the HIV epidemic; another is hunger. After declining in recent decades, the number of hungry people in the world turned upward in the late 1990s and continues to rise.³

The stresses in our early twenty-first century civilization take many forms. Economically we see them in the widening income gap between the world's rich and poor. Socially they take the form of the widening gap in education and health care. Environmentally we have a swelling flow of refugees as productive land turns to desert and as wells go dry. Politically we see the stresses within societies in conflict over basic resources such as cropland, grazing land, and water and, perhaps most fundamentally, in the growing number of failing states.

Our Socially Divided World

The social and economic gap between the world's richest 1 billion people and its poorest 1 billion has no historical precedent. Not only is this gap wide, it is widening. The poorest billion are trapped at subsistence level and the richest billion are becoming wealthier with each passing year. The economic gap can be seen in the contrasts in nutrition, education, disease patterns, family size, and life expectancy.

The U.N. Food and Agriculture Organization reports that 862 million people are undernourished and often hungry. A much larger number, roughly 1.6 billion people, are overnourished and overweight, most of them suffering from excessive caloric intake, exercise deprivation, or a combination of the two. While close to 1 billion people worry whether they will be able to eat, another 1.6 billion worry about eating too much.⁴

Hunger is the most visible face of poverty. Those that are chronically hungry are not getting enough food to achieve full physical and mental development and to maintain adequate levels of physical activity. The majority of the underfed and under-

weight people are concentrated in the Indian subcontinent and sub-Saharan Africa—regions that contain 1.4 billion and 800 million people, respectively. Twenty-five years ago, the nutritional status of Asia's population giants, India and China, was similar, but since then China has eliminated most of its hunger, whereas India has made limited progress. During this last quarter-century, China has accelerated the shift to smaller families. While gains in food production in India were absorbed largely by population growth, those in China went mostly to raising consumption per person.⁵

Malnutrition takes its heaviest toll among the young, who are most vulnerable during their rapid physical and mental development. In both India and Bangladesh, almost half of all children under five are underweight and malnourished. In Ethiopia, 47 percent of children are undernourished, while in Nigeria the figure is 29 percent—and these are two of Africa's most populous countries.⁶

Although it is not surprising that those who are underfed and underweight are concentrated in developing countries, it is perhaps surprising that most of them live in rural communities. More often than not, the undernourished are either landless or they live on plots of land so small that they are effectively landless.⁷

The penalties of being undernourished begin at birth. A U.N. report estimates that 20 million underweight infants are born each year to mothers who also are malnourished. The study indicates that these children suffer lasting effects in the form of “impaired immune systems, neurological damage, and retarded physical growth.” David Barker of Britain's University of Southampton observes soberly “that 60 percent of all newborns in India would be in intensive care had they been born in California.”⁸

Disease patterns also reflect the widening gap between the rich and the poor. The billion poorest suffer mostly from infectious diseases—malaria, tuberculosis, dysentery, measles, respiratory infections, and AIDS. Malnutrition leaves infants and small children even more vulnerable to such infectious diseases. Unsafe drinking water takes a heavier toll on those with hunger-weakened immune systems, resulting in millions of fatalities each year. In contrast, among the billion at the top of the global economic scale, it is diseases related to aging and lifestyle

excesses, including cardiovascular disease, obesity, smoking, high fat diets, and exercise deprivation, that cause most deaths.⁹

There is also a demographic divide. Close to 1 billion people live in countries where population size is essentially stable. But another billion or so live in countries where population is projected to double or more by 2050.¹⁰

Education levels, too, reflect the deep divide. In some industrial countries—for example, Canada and Japan—more than half of all young people now graduate from college with either two- or four-year degrees. By contrast, in developing countries 72 million youngsters of elementary school age are not enrolled in school at all. Although five centuries have passed since Gutenberg invented the printing press, some 781 million adults are illiterate. Unable to read, they are also excluded from the use of computers and the Internet. Without adult literacy programs, their prospects of escaping poverty are not good.¹¹

The world's illiterates are concentrated in a handful of the more populous countries, most of them in Asia and Africa. Prominent among these are Bangladesh, China, Egypt, Ethiopia, India, Indonesia, Nigeria, and Pakistan, plus Brazil and Mexico in Latin America. From 1990 to 2000, China and Indonesia made large gains in reducing illiteracy. Other countries also making meaningful progress were Brazil, Mexico, and Nigeria. However, in four other populous countries—Bangladesh, Egypt, India, and Pakistan—the number of illiterates increased.¹²

Illiteracy and poverty tend to reinforce each other because illiterate women typically have much larger families than literate women do and because each year of schooling raises earning power by 10–20 percent. In Brazil, for instance, illiterate women have more than six children each on average; literate women have only two.¹³

To be poor often means to be sick. As with illiteracy, ill health and poverty are closely linked. Health is closely related to access to safe water, something that 1.1 billion people lack. Waterborne diseases claim more than 3 million lives each year, mostly as a result of dysentery and cholera, and mostly among children. Infant mortality in affluent societies averages 8 per thousand live births; in the 50 poorest countries it averages 95 per thousand—nearly 12 times as high.¹⁴

The connection between poverty and disease is strong, but it has been broken for most of humanity by economic development. The challenge now is to break this link for that remaining minority who do not have access to safe water, vaccines, education, and basic health care.

Health Challenge Growing

Health challenges are becoming more numerous as new infectious diseases such as SARS, West Nile virus, and avian flu emerge. In addition, the accumulation of chemical pollutants in the environment is starting to take a toll. While infectious diseases are fairly well understood, the health effects of many environmental pollutants are not yet known.

Among the leading infectious diseases, malaria claims more than 1 million lives each year, 89 percent of them in Africa. The number of people who suffer from it most of their lives is many times greater. Economist Jeffrey Sachs, head of Columbia University's Earth Institute, estimates that reduced worker productivity and other costs associated with malaria are cutting economic growth by a full percentage point in countries with heavily infected populations.¹⁵

Although diseases such as malaria and cholera exact a heavy toll, there is no recent precedent of a disease affecting as many people as the HIV epidemic does. To find anything similar to such a potentially devastating loss of life, we have to go back to the smallpox decimation of Native American communities in the sixteenth century or to the bubonic plague that took roughly a fourth of Europe's population during the fourteenth century. HIV is an epidemic of epic proportions that, if not checked soon, could take more lives during this century than were claimed by all the wars of the last century.¹⁶

Since the human immunodeficiency virus was identified in 1981, it has spread worldwide. By the end of 2006, the number of people infected had climbed to 86 million. Of this total, more than 40 million have died thus far. Today 25 million HIV-positive people today live in sub-Saharan Africa, but only 1 million or so are being treated with anti-retroviral drugs.¹⁷

Infection rates are climbing. In the absence of effective treatment, the areas of sub-Saharan Africa with the highest infection rates face a staggering loss of life. Countries like Botswana and

Zimbabwe could lose more than a fifth of their adult populations within a decade.¹⁸

The HIV epidemic affects every facet of life and every sector of the economy. Food production per person, already lagging in most countries in sub-Saharan Africa, is now falling fast in some as the number of field workers shrinks. The downward spiral in family welfare typically begins when the first adult falls victim to the illness—a development that is doubly disruptive because for each person who is sick and unable to work, another adult must care for that person.¹⁹

Education is also affected as the ranks of teachers are decimated by the virus. With students, when one or both parents die, children are forced to stay home simply because there is not enough money to buy books and to pay school fees.

The effects on health care are equally devastating. In many hospitals in eastern and southern Africa, a majority of the beds are now occupied by AIDS victims, leaving less space for those with other illnesses. Already overworked doctors and nurses are often stretched to the breaking point. With health care systems now unable to provide even basic care, the toll of traditional disease is also rising. Life expectancy is dropping not only because of AIDS, but also because of the deterioration in overall health care associated with it.²⁰

The epidemic is leaving millions of orphans in its wake. Sub-Saharan Africa is expected to have 18 million "AIDS orphans" by 2010—children who have lost at least one parent to the disease. There is no precedent for millions of street children in Africa. The extended family, once capable of absorbing orphaned children, is now itself being weakened by the loss of adults, leaving children to bury their parents and fend for themselves. For some girls, the only option is what has come to be known as "survival sex." Michael Grunwald writes from Swaziland in the *Washington Post*: "In the countryside, teenage Swazi girls are selling sex—and spreading HIV—for \$5 an encounter, exactly what it costs to hire oxen for a day of plowing."²¹

The HIV epidemic in Africa is now a development problem, threatening not only to undermine future progress but also to eliminate past gains. It threatens food security, undermines the educational system, and dries up foreign investment. It is overwhelming governments, leading to more failing states. Stephen

Lewis, when he was the U.N. Special Envoy for HIV/AIDS in Africa, said that the epidemic can be curbed and the infection trends can be reversed, but it will take help from the international community. The failure to fully fund the Global Fund to Fight AIDS, Tuberculosis and Malaria, he said, is “mass murder by complacency.”²²

Writing in the *New York Times*, Alex de Waal, an adviser to the U.N. Economic Commission for Africa and to UNICEF, sums up the effects of the epidemic well: “Just as HIV destroys the body’s immune system, the epidemic of HIV and AIDS has disabled the body politic. As a result of HIV, the worst hit African countries have undergone a social breakdown that is now reaching a new level: African societies’ capacity to resist famine is fast eroding. Hunger and disease have begun reinforcing each other. As daunting as the prospect is, we will have to fight them together, or we will succeed against neither.”²³

While the HIV epidemic is concentrated in Africa, air and water pollutants are damaging the health of people everywhere. A joint study by the University of California and the Boston Medical Center shows that some 200 human diseases, ranging from cerebral palsy to testicular atrophy, are linked to pollutants. Other diseases that can be caused by pollutants include an astounding 37 forms of cancer, plus heart disease, kidney disease, high blood pressure, diabetes, dermatitis, bronchitis, hyperactivity, deafness, sperm damage, and Alzheimer’s and Parkinson’s diseases.²⁴

Nowhere is pollution damaging human health more than in China, where deaths from cancer have now eclipsed those from heart ailments and cerebrovascular disease. A Ministry of Health survey of 30 cities and 78 counties that was released in 2007 reveals a rising tide of cancer. Populations of some “cancer villages” are being decimated by the disease.²⁵

Jiangsu province, located on the coast just north of Shanghai, is both one of China’s most prosperous provinces and one of its most cancer-ridden. Although it has only 5 percent of the country’s population it has 12 percent of the cancer deaths. One river in the province was laden with 93 different carcinogens, most of them from untreated factory waste.²⁶

Pan Yue, vice minister of China’s Environmental Protection Administration, believes his country “is dangerously near a cri-

sis point.” The reason, he believes, is that Marxism has given way to “an unrestrained pursuit of material gain devoid of morality. Traditional Chinese culture with its emphasis on harmony between human beings and nature,” he says, “was thrown aside.”²⁷

The new reality is that each year China grows richer and sicker. Although there are frequent pronouncements urging steps to reduce pollution, these official statements are largely ignored. There is not yet a real commitment in the Chinese government to control pollution. China’s Environmental Protection Administration has fewer than 300 employees, all located in Beijing. The U.S. Environmental Protection Agency (EPA), in contrast, has 17,000 employees, most of whom work in regional offices around the country where they can observe and monitor pollution at the local level.²⁸

Yet the United States is also still feeling the effects of pollution. In July 2005 the Environmental Working Group, in collaboration with Commonweal, released an analysis of umbilical cord blood from 10 randomly selected newborns in U.S. hospitals. They found a total of 287 chemicals in these tests. “Of the 287 chemicals we detected...we know that 180 cause cancer in humans or animals, 217 are toxic to the brain and nervous system, and 208 cause birth defects or abnormal development in animal tests.” Everyone on the planet shares this “body burden” of toxic chemicals, but infants are at greater risk because they are in the highly vulnerable formative stage of early development.²⁹

WHO reports an estimated 3 million deaths worldwide each year from air pollutants—three times the number of traffic fatalities. In the United States, air pollution each year claims 70,000 lives, compared with the country’s 45,000 traffic deaths.³⁰

A U.K. research team reports a surprising rise in Alzheimer’s and Parkinson’s diseases, and in motor neuron disease generally, in 10 industrial countries—6 in Europe plus the United States, Japan, Canada, and Australia. In England and Wales, deaths from these brain diseases increased from 3,000 per year in the late 1970s to 10,000 in the late 1990s. Over an 18-year period, death rates from these diseases, mainly Alzheimer’s, more than tripled for men and nearly doubled for women. This

increase in dementia is likely linked to a rise in the concentration of pesticides, industrial effluents, car exhaust, and other pollutants in the environment. A 2006 study by the Harvard School of Public Health found that long-term low-level exposure to pesticides raised the risk of developing Parkinson's disease by 70 percent.³¹

Scientists are becoming increasingly concerned about the various effects of mercury, a potent neurotoxin, which now permeates the environment in virtually all countries with coal-burning power plants and many of those with gold mines. For example, gold miners release an estimated 290,000 pounds of mercury into the Amazon ecosystem each year, and coal-burning power plants release nearly 100,000 pounds of mercury into the air in the United States. The U.S. EPA reports that "mercury from power plants settles over waterways, polluting rivers and lakes, and contaminating fish."³²

In 2006, 48 of the 50 states in the United States (all but Alaska and Wyoming) issued a total of 3,080 fish advisories warning against eating fish from local lakes and streams because of their mercury content. EPA research indicates that one out of every six women of childbearing age in the United States has enough mercury in her blood to harm a developing fetus. This means that 630,000 of the 4 million babies born in the country each year may face neurological damage from mercury exposure before birth.³³

No one knows exactly how many chemicals are manufactured today, but with the advent of synthetic chemicals the number of chemicals in use has climbed to over 100,000. A random blood test of Americans will show measurable amounts of easily 200 chemicals that did not exist a century ago.³⁴

Most of these new chemicals have not been tested for toxicity. Those that are known to be toxic are included in a list of nearly 650 chemicals whose discharge by industry into the environment must be reported to the EPA. The Toxics Release Inventory (TRI), now accessible on the Internet, provides information on a community-by-community basis, arming local groups with data needed to evaluate the potential threats to their health and that of the environment. Since the TRI was inaugurated in 1988, reported toxic chemical emissions have declined dramatically.³⁵

Throwaway Economy in Trouble

Another distinctly unhealthy trend is the swelling flow of garbage associated with a throwaway economy. Throwaway products were first conceived following World War II as a convenience and as a way of creating jobs and sustaining economic growth. The more goods produced and discarded, the reasoning went, the more jobs there would be.

What sold throwaways was their convenience. For example, rather than washing cloth towels or napkins, consumers welcomed disposable paper versions. Thus we have substituted facial tissues for handkerchiefs, disposable paper towels for hand towels, disposable table napkins for cloth ones, and throwaway beverage containers for refillable ones. Even the shopping bags we use to carry home throwaway products become part of the garbage flow.

The throwaway economy is on a collision course with the earth's geological limits. Aside from running out of landfills near cities, the world is also fast running out of the cheap oil that is used to manufacture and transport throwaway products. Perhaps more fundamentally, there is not enough readily accessible lead, tin, copper, iron ore, or bauxite to sustain the throwaway economy beyond another generation or two. Assuming an annual 2-percent growth in extraction, U.S. Geological Survey data on economically recoverable reserves show the world has 17 years of reserves remaining for lead, 19 years for tin, 25 years for copper, 54 years for iron ore, and 68 years for bauxite.³⁶

The cost of hauling garbage from cities is rising as nearby landfills fill up and the price of oil climbs. One of the first major cities to exhaust its locally available landfills was New York. When the Fresh Kills landfill, the local destination for New York's garbage, was permanently closed in March 2001, the city found itself hauling garbage to landfill sites in New Jersey, Pennsylvania, and even Virginia—with some of the sites being 300 miles away.³⁷

Given the 12,000 tons of garbage produced each day in New York and assuming a load of 20 tons of garbage for each of the tractor-trailers used for the long-distance hauling, some 600 rigs are needed to move garbage from New York City daily. These tractor-trailers form a convoy nearly nine miles long—impeding traffic, polluting the air, and raising carbon emissions. This

daily convoy led Deputy Mayor Joseph J. Lhota, who supervised the Fresh Kills shutdown, to observe that getting rid of the city's trash is now "like a military-style operation on a daily basis."³⁸

Fiscally strapped local communities in other states are willing to take New York's garbage—if they are paid enough. Some see it as an economic bonanza. State governments, however, are saddled with increased road maintenance costs, traffic congestion, increased air pollution, potential water pollution from landfill leakage, and complaints from nearby communities.

In 2001 Virginia's Governor Jim Gilmore wrote to Mayor Rudy Giuliani to complain about the use of Virginia for New York City's trash. "I understand the problem New York faces," he noted, "but the home state of Washington, Jefferson and Madison has no intention of becoming New York's dumping ground."³⁹

Garbage travails are not limited to New York City. Toronto, Canada's largest city, closed its last remaining landfill on December 31, 2002, and now ships all its 750-thousand-ton-per-year garbage to Wayne County, Michigan. Ironically, the state of New Jersey, a recipient of New York's waste, is now shipping up to 1,000 tons of demolition debris 600 miles each day—also to Wayne County in Michigan.⁴⁰

In Athens, the capital of ancient and modern Greece, the one landfill available reached saturation at the end of 2006. With local governments in Greece unwilling to accept Athens's garbage, the city's daily output of 6,000 tons began accumulating on the streets, creating a garbage crisis. The country is finally beginning to pay attention to what European Union environment commissioner Stavros Dimas, himself a Greek, calls the waste hierarchy, where priority is given first to the prevention of waste and then to its reuse, recycling, and recovery.⁴¹

One of the more recent garbage crises is unfolding in China, where, like everything else in the country, the amount of garbage generated is growing fast. Xinhua, a Chinese wire service, reports that a survey using an airborne remote sensor detected 7,000 garbage dumps, each larger than 50 square meters in the suburbs of Beijing, Tianjin, Shanghai, and Chongqing. A large share of China's garbage is recycled, burned, or composted, but an even larger share is dumped in landfills (where they are available) or simply heaped up in unoccupied areas.⁴²

The challenge is to replace the throwaway economy with a reduce-reuse-recycle economy. Officials should worry less about what to do with garbage and think more about how to avoid producing it in the first place.

Population and Resource Conflicts

As land and water become scarce, competition for these vital resources intensifies within societies, particularly between the wealthy and those who are poor and dispossessed. The shrinkage of life-supporting resources per person that comes with population growth is threatening to drop the living standards of millions of people below the survival level, leading to potentially unmanageable social tensions.⁴³

Access to land is a prime source of social tension. Expanding world population has cut the grainland per person in half, from 0.23 hectares in 1950 to 0.10 hectares in 2007. One tenth of a hectare is half of a building lot in an affluent U.S. suburb. This ongoing shrinkage of grainland per person makes it difficult for the world's farmers to feed the 70 million people added to world population each year.⁴⁴

The shrinkage in cropland per person not only threatens livelihoods; in largely subsistence societies, it threatens survival itself. Tensions within communities begin to build as landholdings shrink below that needed for survival.

The Sahelian zone of Africa, with one of the world's fastest-growing populations, is an area of spreading conflict. In troubled Sudan, 2 million people have died and over 4 million have been displaced in the long-standing conflict of more than 20 years between the Muslim north and the Christian south. The more recent conflict in the Darfur region in western Sudan that began in 2003 illustrates the mounting tensions between two Muslim groups—camel herders and subsistence farmers. Government troops are backing Arab militias, who are engaging in the wholesale slaughter of black Sudanese in an effort to drive them off their land, sending them into refugee camps in neighboring Chad. To date, some 200,000 people have been killed in the conflict and another 250,000 have died of hunger and disease in the refugee camps.⁴⁵

The story of Darfur is that of the Sahel, the semiarid region of grassland and dryland farming that stretches across Africa

from Senegal in the west to Somalia in the east. In the northern Sahel, grassland is turning to desert, forcing herders southward into the farming areas. Declining rainfall and overgrazing are combining to destroy the grasslands.

Well before the rainfall decline the seeds for the conflict were being sown as Sudan's population climbed from 9 million in 1950 to 39 million in 2007, more than a fourfold rise. Meanwhile, the cattle population increased from fewer than 7 million to 40 million, an increase of nearly sixfold. The number of sheep and goats together increased from fewer than 14 million to 113 million, an eightfold increase. No grasslands can survive such rapid continuous growth in livestock populations.⁴⁶

In Nigeria, where 148 million people are crammed into an area not much larger than Texas, overgrazing and overplowing are converting grassland and cropland into desert, putting farmers and herders in a war for survival. As Somini Sengupta reported in the *New York Times* in June 2004, "in recent years, as the desert has spread, trees have been felled and the populations of both herders and farmers have soared, the competition for land has only intensified."⁴⁷

Unfortunately, the division between herders and farmers is also often the division between Muslims and Christians. The competition for land, amplified by religious differences and combined with a large number of frustrated young men with guns, has created what the *New York Times* described as a "combustible mix" that has "fueled a recent orgy of violence across this fertile central Nigerian state [Plateau]. Churches and mosques were razed. Neighbor turned against neighbor. Reprisal attacks spread until finally, in mid-May [2004], the government imposed emergency rule."⁴⁸

Similar divisions exist between herders and farmers in northern Mali, the *New York Times* noted, where "swords and sticks have been chucked for Kalashnikovs, as desertification and population growth have stiffened the competition between the largely black African farmers and the ethnic Tuareg and Fulani herders. Tempers are raw on both sides. The dispute, after all, is over livelihood and even more, about a way of life."⁴⁹

Rwanda has become a classic case study in how mounting population pressure can translate into political tension, conflict, and social tragedy. James Gasana, who was Rwanda's Minister

of Agriculture and Environment in 1990–92, offers some insights. As the chair of a national agricultural commission in 1990, he had warned that without "profound transformations in its agriculture, [Rwanda] will not be capable of feeding adequately its population under the present growth rate." Although the country's demographers projected major future gains in population, Gasana said in 1990 that he did not see how Rwanda would reach 10 million inhabitants without social disorder "unless important progress in agriculture, as well as other sectors of the economy, were achieved."⁵⁰

Gasana's warning of possible social disorder was prophetic. He further described how siblings inherited land from their parents and how, with an average of seven children per family, plots that were already small were fragmented further. Many farmers tried to find new land, moving onto steeply sloping mountains. By 1989, almost half of Rwanda's cultivated land was on slopes of 10 to 35 degrees, land that is universally considered uncultivable.⁵¹

In 1950, Rwanda's population was 2.4 million. By 1993, it had tripled to 7.5 million, making it the most densely populated country in Africa. As population grew, so did the demand for firewood. By 1991, the demand was more than double the sustainable yield of local forests. As trees disappeared, straw and other crop residues were used for cooking fuel. With less organic matter in the soil, land fertility declined.⁵²

As the health of the land deteriorated, so did that of the people dependent on it. Eventually there was simply not enough food to go around. A quiet desperation developed. Like a drought-afflicted countryside, it could be ignited with a single match. That ignition came with the crash of a plane on April 6, 1994, shot down as it approached the capital Kigali, killing President Juvenal Habyarimana. The crash unleashed an organized attack by Hutus, leading to an estimated 800,000 deaths of Tutsis and moderate Hutus in 100 days. In some villages, whole families were slaughtered lest there be survivors to claim the family plot of land.⁵³

Many other African countries, largely rural in nature, are on a demographic track similar to Rwanda's. Tanzania's population of 40 million in 2007 is projected to increase to 85 million by 2050. Eritrea, where the average family has six children, is projected to grow from 5 million to 11 million by 2050. In the

Democratic Republic of the Congo, the population is projected to triple, going from 63 million to 187 million.⁵⁴

Africa is not alone. In India, tension between Hindus and Muslims is never far below the surface. As each successive generation further subdivides already small plots, pressure on the land is intense. The pressure on water resources is even greater.

With India's population projected to grow from 1.2 billion in 2007 to 1.7 billion in 2050, a collision between rising human numbers and shrinking water supplies seems inevitable. The risk is that India could face social conflicts that would dwarf those in Rwanda. As Gasana notes, the relationship between population and natural systems is a national security issue, one that can spawn conflicts along geographic, tribal, ethnic, or religious lines.⁵⁵

Disagreements over the allocation of water among countries that share river systems is a common source of international political conflict, especially where populations are outgrowing the flow of the river. Nowhere is this potential conflict more stark than among Egypt, Sudan, and Ethiopia in the Nile River valley. Agriculture in Egypt, where it rarely rains, is wholly dependent on water from the Nile. Egypt now gets the lion's share of the Nile's water, but its current population of 75 million is projected to reach 121 million by 2050, thus greatly expanding the demand for grain and water. Sudan, whose 39 million people also depend heavily on food produced with Nile water, is expected to have 73 million by 2050. And the number of Ethiopians, in the country that controls 85 percent of the river's headwaters, is projected to expand from 83 million to 183 million.⁵⁶

Since there is already little water left in the Nile when it reaches the Mediterranean, if either Sudan or Ethiopia takes more water, then Egypt will get less, making it increasingly difficult to feed an additional 46 million people. Although there is an existing water rights agreement among the three countries, Ethiopia receives only a minuscule share of water. Given its aspirations for a better life, and with the headwaters of the Nile being one of its few natural resources, Ethiopia will undoubtedly want to take more.⁵⁷

To the north, Turkey, Syria, and Iraq share the waters of the Tigris and Euphrates river system. Turkey, controlling the head-

waters, is developing a massive project on the Tigris to increase the water used for irrigation and power. Syria and Iraq, which are both projected to nearly double their respective populations of 20 million and 29 million, are concerned because they too will need more water.⁵⁸

In the Aral Sea basin in Central Asia, there is an uneasy arrangement among five countries over the sharing of the two rivers, the Amu Darya and the Syr Darya, that drain into the sea. The demand for water in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan already exceeds the flow of the two rivers by 25 percent. Turkmenistan, which is upstream on the Amu Darya, is planning to develop another half-million hectares of irrigated agriculture. Racked by insurgencies, the region lacks the cooperation needed to manage its scarce water resources. On top of this, Afghanistan, which controls the headwaters of the Amu Darya, plans to use some of the water for its development. Geographer Sarah O'Hara of the University of Nottingham, who studies the region's water problems, says, "We talk about the developing world and the developed world, but this is the deteriorating world."⁵⁹

Environmental Refugees on the Rise

Desert expansion in sub-Saharan Africa, principally in the Sahelian countries, is displacing millions of people—forcing them to either move southward or migrate to North Africa. A 2006 U.N. conference on desertification in Tunisia projected that by 2020 up to 60 million people could migrate from sub-Saharan Africa to North Africa and Europe. This flow of migrants has been under way for many years.⁶⁰

In mid-October 2003, Italian authorities discovered a boat bound for Italy carrying refugees from Africa. After being adrift for more than two weeks and having run out of fuel, food, and water, many of the passengers had died. At first the dead were tossed overboard. But after a point, the remaining survivors lacked the strength to hoist the bodies over the side. The dead and the living shared the boat, resembling what a rescuer described as "a scene from Dante's *Inferno*."⁶¹

The refugees were believed to be Somalis who had embarked from Libya, but the survivors would not reveal their country of origin, lest they be sent home. We do not know whether they

were political, economic, or environmental refugees. Failed states like Somalia produce all three. We do know that Somalia is an ecological basket case, with overpopulation, overgrazing, and the resulting desertification destroying its pastoral economy.⁶²

On April 30, 2006, a man fishing off the coast of Barbados discovered a 20-foot boat adrift with the bodies of 11 young men on board, bodies that were “virtually mummified” by the sun and salty ocean spray. As the end drew near, one passenger left a note tucked between two bodies: “I would like to send my family in Basada [Senegal] a sum of money. Please excuse me and goodbye.” The author of the note was apparently one of a group of 52 who had left Senegal on Christmas Eve aboard a boat destined for the Canary Islands, a jumping off point for Europe. They apparently drifted for some 2,000 miles, ending their trip in the Caribbean. This boat was not unique. During the first weekend of September 2006, police intercepted boats from Mauritania, with a record total of nearly 1,200 people on board.⁶³

For Central American countries, including Honduras, Guatemala, Nicaragua, and El Salvador, Mexico is often the gateway to the United States. In 2006, Mexican immigration authorities reported some 240,000 detentions and deportations, up 74 percent since 2002.⁶⁴

In the city of Tapachula on the Guatemala-Mexico border, young men in search of jobs wait along the tracks for a slow-moving freight train moving through the city en route to the north. Some make it onto the train. Others do not. The Jesús el Buen Pastor refuge is home to 25 amputees who lost their grip and fell under the train while trying to board. For these young men, says Olga Sánchez Martínez, the director of the refuge, this is the “end of their American dream.” A local priest, Flor María Rigoni, calls the migrants attempting to board the trains “the kamikazes of poverty.”⁶⁵

Today, bodies washing ashore in Italy, Spain, and Turkey are a daily occurrence, the result of desperate acts by desperate people. And each day Mexicans risk their lives in the Arizona desert trying to reach jobs in the United States. Some 400–600 Mexicans leave rural areas every day, abandoning plots of land too small or too eroded to make a living. They either head for Mexican cities or try to cross illegally into the United States. Many

of those who try to cross the Arizona desert perish in its punishing heat; scores of bodies are found along the Arizona border each year.⁶⁶

With the vast majority of the 3 billion people to be added to the world by 2050 coming in countries where water tables are already falling, water refugees are likely to become commonplace. They will be most common in arid and semiarid regions where populations are outgrowing the water supply and sinking into hydrological poverty. Villages in northwestern India are being abandoned as aquifers are depleted and people can no longer find water. Millions of villagers in northern and western China and in parts of Mexico may have to move because of a lack of water.⁶⁷

Advancing deserts are also displacing people, squeezing expanding populations into an ever smaller geographic area. Whereas the U.S. Dust Bowl displaced 3 million people, the advancing desert in China’s dust bowl provinces could displace tens of millions.⁶⁸

In Iran, villages abandoned because of spreading deserts or a lack of water already number in the thousands. In the vicinity of Damavand, a small town within an hour’s drive of Tehran, 88 villages have been abandoned. And as the desert takes over in Nigeria, farmers and herders are forced to move, squeezed into a shrinking area of productive land. Desertification refugees typically end up in cities, many in squatter settlements. Many migrate abroad.⁶⁹

Another new source of refugees, potentially a huge one, is rising seas. The refugee flows from falling water tables and expanding deserts are already under way. Those from rising seas are just beginning, but the numbers could eventually reach the hundreds of millions, offering yet another reason for stabilizing climate and population.

Mounting Stresses, Failing States

After a half-century of forming new states from former colonies and from the breakup of the Soviet Union, the international community is today focusing on the disintegration of states. Failing states are now an integral part of the international political landscape. As the Fund for Peace and the Carnegie Endowment for International Peace observe, “Failed states have made

a remarkable odyssey from the periphery to the very center of global politics.”⁷⁰

As noted in Chapter 1, these groups have together identified a list of 60 states, ranking them according to “their vulnerability to violent internal conflict and societal deterioration.” This analysis, published in *Foreign Policy*, is based on 12 social, economic, political, and military indicators. It puts Sudan at the top of the list of failed states, followed by Iraq, Somalia, Zimbabwe, and Chad. Three oil-exporting countries are among the top 20 failing states—Sudan, Iraq, and Nigeria. Indonesia and Iran are farther down the list. Pakistan, now ranking number 12 on the list, is the only failing state with a nuclear arsenal.⁷¹

Three of the dozen indicators used in constructing the *Foreign Policy* scorecard are uneven development, the loss of governmental legitimacy, and demographic pressure. Uneven development typically means that a small segment of the population is accumulating wealth while much of the society may be suffering a decline in living conditions. This unevenness, often associated with political corruption, creates unrest and can lead to civil conflict.⁷²

Governments that fail to effectively manage emerging issues and provide basic services are seen as useless. This often causes segments of the population to shift their allegiance to warlords, tribal chieftains, or religious leaders. A loss of political legitimacy is an early sign of state decline.

A third indicator is demographic pressure. In many countries that have experienced rapid population growth for several decades, governments are suffering from demographic fatigue, unable to cope with the steady shrinkage in cropland and fresh water supplies per person or to build schools fast enough for the swelling ranks of children.⁷³

Sudan, which heads the 2007 list of failing states, is a classic case of a country caught in the demographic trap, a situation where it has developed far enough economically and socially to reduce mortality, but not far enough to quickly reduce fertility. As a result, women on average have five children, well beyond the two needed for replacement, and the population of 39 million is growing by 2,400 per day. Under this pressure, Sudan—like scores of other countries—is breaking down.⁷⁴

All but two of the 20 countries (Zimbabwe and North

Korea) at the top of the list of failing states are caught in this demographic trap. They probably cannot break out of this trap on their own. They will need outside help or the political situation will simply continue to deteriorate.⁷⁵

Foreign investment drying up and a resultant rise in unemployment are also part of the decline syndrome. An earlier study by Population Action International showed that one of the key indicators of political instability in a society is the number of unemployed young men, a number that is high in countries at the top of the *Foreign Policy* list.⁷⁶

Another characteristic of failing states is a deterioration of the physical infrastructure—roads and power, water, and sewage systems. Care for natural systems is also neglected as people struggle to survive. Forests, grasslands, and croplands deteriorate, creating a downward economic spiral.

Among the most conspicuous indications of state failure is a breakdown in law and order and a related loss of personal security. In Haiti, armed gangs rule the streets. Kidnapping for ransom of local people who are lucky enough to be among the 30 percent of the labor force that is employed is commonplace. In Afghanistan it is the local warlords, not the central government, that control the country outside of Kabul. Somalia, which now exists only on maps, is ruled by tribal leaders, each claiming a piece of what was once a country.⁷⁷

Some of these countries are involved in long-standing civil conflicts. The Democratic Republic of the Congo, occupying a large part of the Congo River basin in the heart of Africa, was the site of civil war from 1998 to 2003 and has since suffered from numerous outbreaks of violence. This ongoing conflict has claimed nearly 4 million lives and driven millions more from their homes. According to the International Rescue Committee, the vast majority of deaths are nonviolent, including those from hunger, respiratory illnesses, diarrhea, and other diseases.⁷⁸

Failing states are of growing international concern because they are a source of terrorists, drugs, weapons, and refugees. Not only was Afghanistan a training ground for terrorists, but it quickly became, under the Allied occupation, the world’s leading supplier of heroin. Now Iraq, number two on the 2007 failing states list, is number one on the terrorist training list. Refugees from Rwanda, including thousands of armed soldiers,

contributed to the destabilization of the Congo. As *The Economist* noted in December 2004, “like a severely disturbed individual, a failed state is a danger not just to itself, but to those around it and beyond.”⁷⁹

In many countries, the United Nations or other internationally organized peacekeeping forces are trying to keep the peace, often unsuccessfully. Among the countries with U.N. peacekeeping forces are the Democratic Republic of the Congo, Liberia, and Sierra Leone. Other countries with multinational peacekeeping forces include Afghanistan, Haiti, and Sudan. All too often these are token forces, not nearly large enough to ensure stability.⁸⁰

Countries like Haiti and Afghanistan are surviving today because they are on international life-support systems. Economic assistance—including, it is worth noting, food aid—is helping to sustain them. But there is now not enough assistance to overcome the reinforcing trends of deterioration and replace them with state stability and sustained economic progress.⁸¹

In an age of increasing globalization and economic integration, the functioning of the global system and thus the well-being of individual states depends on a cooperative network of functioning nation states. When governments lose their capacity to govern they can no longer collect taxes, much less pay off international debts. More failing states means more bad debt. Efforts to control international terrorism depend on cooperation among functioning nation states, and these efforts weaken as states fail.

Protecting endangered species almost always requires close international cooperation too. In countries such as the Democratic Republic of the Congo, where government agencies have collapsed, hunger is widespread, and chaos reigns, the population of lowland mountain gorillas has dropped precipitously. This story is being repeated over and over in Africa, where so much of the world’s remaining large mammal species are concentrated.⁸²

Or consider the international network that controls the spread of infectious diseases, such as avian flu, SARS, and polio, or of diseases that affect animals, such as mad cow and hoof-and-mouth disease. In 1988 the international community launched an effort to eradicate polio, an effort patterned after

the highly successful one that eliminated smallpox. The goal was to get rid of the dreaded disease that used to paralyze an average of 1,000 children each day. By 2003 the disease had been eradicated in all but a few countries, among them Afghanistan, India, Nigeria, and Pakistan.⁸³

In 2003, religious leaders in northern Nigeria began to oppose the vaccination program on the grounds that it was a plot to spread AIDS and sterility. As a result, the number of cases of polio in Nigeria increased rapidly, tripling over the next three years. Meanwhile, Nigerian Muslims making their annual pilgrimage to Mecca may have spread the disease, bringing it back to some countries, such as Indonesia, Chad, and Somalia, that were already polio-free. In response, Saudi officials imposed a polio vaccination requirement on all younger visitors from countries with reported cases of polio.⁸⁴

As of late 2007 the disease is still endemic in Afghanistan, Nigeria, India, and Pakistan, with cases still being reported in a total of 10 countries. With infection reoccurring in failing states, the goal of a world that is polio-free, already reached in some 190 countries, could be slipping away. If the international community cannot effectively address the failing state phenomena, the prospect of reaching other goals could also fade.⁸⁵