

Resources

- Beck, Ulrich. 1992. *Risk Society: Towards a New Modernity*. Translated by Mark Ritter. London and Newbury Park, CA: Sage.
- Beck, Ulrich. 1999. *World Risk Society*. Oxford, UK: Blackwell, and Malden, MA: Polity.
- Cléménçon, Raymond. 2012. "From Rio 1992 to Rio 2012 and Beyond: Revisiting the Role of Trade Rules and Financial Transfers for Sustainable Development." *Journal of Environment and Development* 21 (1): 5–14.
- Eisenstadt, Shmuel N., ed. 2002. *Multiple Modernities*. New Brunswick, NJ: Transaction.
- Frank, Andre Gunder. 1998. *ReOrient: Global Economy in the Asian Age*. Berkeley: University of California Press.
- Kaul, Inge; Pedro Conceicao; Katell Le Goulven; and Ronald Mendoza, eds. 2003. *Providing Global Public Goods: Managing Globalization*. Oxford, UK: Oxford University Press.
- Lal, Deepak. 1983. *The Poverty of "Development Economics"*. London: Institute of Economic Affairs.
- Nederveen Pieterse, Jan. 2010. *Development Theory: Deconstructions/Reconstructions*, 2nd ed. London and Thousand Oaks, CA: Sage.
- Nederveen Pieterse, Jan, and Boike Rehbein, eds. 2009. *Globalization and Emerging Societies: Development and Inequality*. Basingstoke, UK: Palgrave Macmillan.
- Rahnema, Majid, and Victoria Bawtree, eds. 1997. *The Post-development Reader*. London and Atlantic Highlands, NJ: Zed.
- Rostow, W. W. 1960. *The Stages of Economic Growth: A Non-Communist Manifesto*. Cambridge, UK: Cambridge University Press.
- Sunkel, Osvaldo. 2008. "The Precarious Sustainability of Democracy in Latin America." In *Sustainable Development in a Globalized World: Studies in Development, Security and Culture*, Vol. 1, ed. Björn Hettne, 43–69. London: Palgrave Macmillan.

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Disease

Sustainable development addresses the immediate and long-term balance of environmental, social, and economic intentions that improve the well-being of humanity. Intergovernmental organizations (IGOs), such as the World Health Organization (WHO), and nongovernmental organizations (NGOs), such as the Red Cross, have attempted to put global health at the heart of the sustainability agenda over the past several decades, holding international conferences, forming committees, and encouraging people to take active roles at the grassroots level. In addition, philanthropic organizations, such as the Bill and Melinda Gates Foundation, have prioritized the reduction of disease for sustainable human development. International institutions and leaders of developing countries acknowledge that investing in health is a critical step toward sustainable development. Although the heavy burden of disease in poor countries still decreases overall quality of life, global health research and program implementation have dramatically improved conditions among poor populations.

In a 2001 study, WHO's Commission on Macroeconomics and Health evaluated disease epidemics, health-care services, and available resources in developing countries. The commission addressed the question of

how countries with decreasing death rates and increasing life expectancy might address potential increases in population. It found that the implementation of affordable and effective interventions that improved overall health reduced population growth in low-income countries.

Historical Background

A mutually reinforcing relationship exists between the economic status and overall health status of a nation's population. Past research focused on one direction of influence: as a country became wealthier, the health and well-being of its residents improved. In the twenty-first century, research has found the opposite direction of influence to be equally or more important: as the health and well-being of residents in a country improve, that country's economic status also rises. This understanding has helped spur increased funding for global health. According to the Kaiser Family Foundation, official development assistance (ODA) for global health nearly quadrupled from US\$4.5 billion in 2002 to US\$17.2 billion in 2009 (Kates et al. 2011, 2). Table 1 depicts this increase in health ODA by region from 2002 to 2009.

| | 2002 | 2008 | 2009 | 2008–2009 | 2002–2009 |
|-----------------------|--------------|---------------|---------------|----------------------|------------------------|
| | | | | +/- \$ (%) | +/- \$ (%) |
| North Africa | 0.1 | 0.3 | 0.2 | -0.10 (-38%) | +0.09 (127%) |
| Sub-Saharan Africa | 1.5 | 7.5 | 8.2 | +0.66 (9%) | +6.73 (463%) |
| North/Central America | 0.2 | 0.5 | 0.5 | -0.03 (-6%) | +0.33 (195%) |
| South America | 0.1 | 0.3 | 0.3 | +0.01 (4%) | +0.22 (208%) |
| Far East Asia | 0.3 | 1.1 | 1.1 | +0.08 (7%) | +0.84 (277%) |
| South/Central Asia | 1.0 | 1.9 | 2.3 | +0.35 (18%) | +1.26 (124%) |
| Middle East | 0.1 | 0.3 | 0.3 | -0.01 (-2%) | +0.18 (215%) |
| Europe | 0.1 | 0.2 | 0.2 | +0.01 (4%) | +0.15 (203%) |
| Oceania | 0.1 | 0.2 | 0.2 | +0.03 (16%) | +0.15 (192%) |
| Regional | 0.1 | 0.3 | 0.3 | +0.02 (8%) | +0.26 (347%) |
| Unspecified | 1.0 | 3.0 | 3.5 | +0.55 (19%) | +2.45 (233%) |
| TOTAL | \$4.5 | \$15.6 | \$17.2 | +\$1.57 (10%) | +\$12.67 (282%) |

*Official Development Assistance
Gross US\$ Disbursements in Billions

SOURCE: Kates, Jen, Adam Wexler, and Allison Valentine. 2011. "Donor Funding for Health in Low- and Middle-Income Countries, 2002–2009." Kaiser Family Foundation. Available from <http://www.kff.org/globalhealth/upload/7679-05.pdf>.

Table 1. Total health ODA by region, 2002, 2008, 2009. (Reproduced by permission of Gale, a part of Cengage Learning.)

The WHO Commission on Macroeconomics and Health made recommendations to direct increases in funding to: (1) increase spending on health in individual countries, (2) support effective health interventions, and (3) provide robust financing of research on the burden of disease among the world's poorest people. These recommendations were based on the argument that investing in health fuels economic development and thus can be very cost-effective. However, the recommendations of the commission did not extend to potential impacts of economic growth on the environment.

Greater economic growth has long been recognized as a potential threat to the environment. The relationship between environmental degradation and income level can be hypothesized based on a theory developed by the American economist and 1971 Nobel Prize recipient Simon Kuznets (1901–1985). The Environmental Kuznets Curve argues that poor countries are polluters and, as their incomes grow, environmental degradation worsens. Once the country reaches a certain level of per capita income, more economic growth is associated with improvement in environmental conditions. The Environmental Kuznets Curve may be realized or not, depending on country conditions and policies.

Global Awareness of Disease and Sustainable Development Links

The connections between health and economic growth and between economic growth and environment were linked at the first United Nations–sponsored World Summit on

Sustainable Development in 1992 in Rio de Janeiro, Brazil. Gro Harlem Brundtland, former prime minister of Norway and future leader of WHO, spearheaded thinking about the interconnectedness of sustainable development, health, environment, and economy. The Rio conference contributed to greater understanding of the influence that availability of national resources has on human development, and thus the importance of a multisectorial framework and uniting around common goals.

Ten years after the first meeting, the 2002 World Summit also highlighted the importance of health in sustainable development. Fundamentally, as environmental protection and economic development increase in developing countries, a healthier population will maximize the benefits of development. Summit attendees defined the concept of global public goods (GPG), such as clean air and oceans, and emphasized how they affect growth and development around the world, in addition to being central to improving human health. The positive effects of GPGs are at risk of being overwhelmed by what the World Summit dubbed global public bads (GPB). GPBs, which can occur simultaneously and affect any and all populations, range from human rights violations to pollution. In this framework, disease control is a GPG and disease is a GPB. Considering disease control as part of sustainable development strengthens the value of programs to increase health worldwide.

The World Summit meetings have served as milestones for understanding the broader trends surrounding sustainable development. Although great strides have been made since the first World Summit, problems such

as the spread of infectious disease still need to be solved. Even with a call for future World Summit meetings to find multisectorial solutions, there is no clear set of policies designed to strengthen the link between health and sustainable development.

Types of Disease and Major Issues

A nation's economic situation is in general related to the type of disease conditions it experiences. Infectious diseases, such as malaria and tuberculosis, prevail in poor countries, and noncommunicable diseases, such as cardiovascular-related conditions and other chronic diseases, predominate in wealthy countries. Although rich countries still struggle with chronic health issues, the disease burden in low- and middle-income countries has undergone significant shifts, resulting in a double burden of infectious and chronic disease.

Infectious Disease

Infectious diseases were largely eradicated from rich countries during the nineteenth and twentieth centuries, and, with increased attention and funding since the late twentieth century, progress has been made to reduce their prevalence in developing countries as well. Malaria, tuberculosis, HIV/AIDS, and SARS are examples of infectious diseases that place a great burden on low- and middle-income countries. Improvements in health technology, such as vaccines, have allowed for control of these types of diseases in wealthier nations; however, many countries have not yet benefited from these advances. Those developing nations with poverty-stricken populations experience significant hardship as a result.

Childhood diseases such as measles and certain infections that can be more deadly for children, such as pneumonia and diarrhea-causing bacteria, have been successfully controlled in wealthy nations through vaccines and other control measures. This is not the case in low-income nations. WHO reported in 2009 that while child immunization rates were at an all-time high globally, barriers such as cost still prevent access for many families. Over two billion people in middle-income nations—those countries experiencing an increase in overall wealth but not yet considered wealthy—are having a particularly difficult time receiving global funding for and access to life-saving vaccines and other eradication tools such as access to clean water.

Sexually transmitted disease (STD) is another critical health issue in low-income countries. As of December 2009, 33.3 million people were living with HIV worldwide. Sub-Saharan Africa bears a disproportionate burden, with 1.8 million new HIV cases occurring

| Disease or Injury | 2004 Rank | 2030 Rank | Change in Rank |
|--|-----------|-----------|----------------|
| Ischemic heart disease | 1 | 1 | 0 |
| Cerebrovascular disease | 2 | 2 | 0 |
| Lower respiratory infections | 3 | 4 | -1 |
| Chronic obstructive pulmonary disease | 4 | 3 | +1 |
| Diarrheal diseases | 5 | 17 | -12 |
| HIV/AIDS | 6 | 9 | -3 |
| Tuberculosis | 7 | 19 | -12 |
| Prematurity and low birth weight | 8 | 20 | -12 |
| Road traffic accidents | 9 | 5 | +2 |
| Neonatal infections and other conditions | 10 | 16 | -6 |
| Other unintentional injuries | 11 | 11 | 0 |
| Diabetes mellitus | 12 | 6 | +6 |
| Malaria | 13 | 33 | -20 |
| Birth asphyxia and birth trauma | 14 | 25 | -11 |
| Trachea/bronchus/lung cancers | 15 | 7 | +8 |

*Bold face diseases are noncommunicable

SOURCE: World Health Organization. 2008. "The Global Burden of Disease: 2004 Update." Available from <http://www.who.int>.

Table 2. Changes in rankings for 15 leading causes of death, 2004 and 2030, in low- and middle-income countries baseline scenario. (Reproduced by permission of Gale, a part of Cengage Learning.)

in the region in 2009 (UNAIDS 2009). The impact of the HIV/AIDS epidemic on society, while slowly improving, curtails the possibility for sustainable economic development. Individuals living with the disease are less likely to contribute to economic growth and productivity, and continued treatment puts a strain on limited health resources in developing countries.

Although these statistics show that an immense number of people still suffer from infectious diseases worldwide, it has been demonstrated that infectious diseases decline as a nation's income level rises. This epidemiological transition is beneficial to individual people as well as to entire nations: with the rate of infection slowing, fewer countries are suffering from the double disease burden of a high prevalence of both infectious and noninfectious diseases. It is important to note that, even as fewer countries experience the double disease burden, many nations, such as China, Vietnam, and India, continue to face this hardship. In addition, the increasing prevalence of chronic diseases is adding greater strain to economically disadvantaged nations.

Noncommunicable Diseases in Low-Income Countries

Noncommunicable diseases (NCDs) are noncontagious diseases that arise over time as a result of the accumulation of exposures to risks as well as age-related health problems. NCDs, which include cancer, diabetes,

respiratory conditions, mental disorders, and cardiovascular disease (CVD), were long considered the “diseases of the rich,” with high-income countries experiencing a greater number of deaths due to NCDs than low-income countries. The decline in NCDs in wealthier countries has been attributed to increased access to health care and treatment, as well as changes in behavior such as exercise and improved eating habits. As wealthy nations have experienced a drop in NCD prevalence, poor countries are simultaneously experiencing increases in NCDs. This trend is receiving global attention. The World Economic Forum now ranks NCDs as one of the world’s greatest threats to development. The household costs of treating NCDs put significant economic strain on families and communities, which can result in loss of productivity, sending more people into poverty. In 2008 WHO found that in many countries NCDs were surpassing infectious diseases as the leading cause of death. It is anticipated that NCDs will be responsible for 74 percent of mortality in low- and middle-income countries by 2030 (WHO 2008). Table 2 highlights the shift in global causes of death and demonstrates the rise of noncommunicable diseases in poorer countries.

As communities and cities continue to grow, they develop more sophisticated and modern environments in which people can live. These environments must be developed wisely with human health needs in mind so as to limit people’s exposure to diseases in their environments.

Demographic Trends and Transitions

In developing countries, population growth, urbanization, and the aging of populations have played a key role in sustainable development. These trends have affected, and have been affected by, the burden of disease.

Population growth, which leads to a larger number of people competing for resources and the increased prevalence of NCDs, strains struggling economies and stunts the possibility for development. The areas of the world in which population growth has not slowed are the countries most burdened by disease. According to the report released by the WHO Commission on Macroeconomics and Health, “high-income countries have population growth rates below 1 percent per year, and the poorest countries have population growth rates of about 2 percent per year” (2001, 46).

Health interventions have slowed overall population growth worldwide, taking pressure off the environment and opening the door for sustainable development. When discussing health interventions, the WHO Commission on Macroeconomics and Health found that reproductive health investments, including increased access to

contraceptives and family planning education, reduced fertility and led to higher health and education investments in children. These interventions also include increased reproductive rights for the very poor and people living in rural areas, giving people the ability to make family planning decisions freely. Reproductive rights have been found to help decrease maternal and child mortality and to allow for better access to basic reproductive health care (Obaid 2009).

The urbanization trend has meant that more people are living in urban settings than in rural settings. The benefits of living in an urban area include better access to health services and increased employment and recreational opportunities. However, urban settings also give rise to risky behaviors such as smoking and consuming alcohol, both because of greater access and affordability. Furthermore, traffic congestion, air pollution, and poor diet all create negative health effects for urban residents. For example, individuals who relocate to an urban environment may be unable to grow food at home, thus having to rely on commercially prepared food to feed themselves and their families. The transition from fresh, homegrown food to cheap and nutrient-poor food can simultaneously contribute to adult and child obesity and insufficient nutrition in urban areas (Caballero 2005). Obesity and malnutrition can lead to life-threatening diseases, such as heart disease, diabetes, and other noncommunicable diseases that are difficult and expensive to treat. As populations emigrate from rural to urban settings, they are living longer than before but suffering from different health ailments.

The decline in infectious diseases and advances in health care have increased life expectancy so that average age is increasing in all countries. Although the trend of population aging and increased life expectancy in developing countries is encouraging, it also changes the types of disease and health complications these populations experience. WHO estimates that NCD deaths will rise significantly, reaching fifty-two million in 2030, and annual CVD and cancer-related deaths will rise by six million and four million, respectively (WHO). Aging will not be the sole risk factor for NCDs: according to the Institute of Medicine, the culmination of many years of unhealthy behavior or exposure to harmful environments may be a cause of CVD and NCDs among older people in developing countries.

Natural and Built Environments

Human health, environmental health, and economic development build on one another. Disease and health conditions have been linked to environmental factors such as overcrowding and poor housing conditions. For

example, in Brazil and other countries deaths from pneumonia, tuberculosis, and measles have been caused by overcrowded living conditions, according to WHO. The natural and built environments affect economic development and sustainability in many ways.

The natural environment includes the air, water, soil, and food derived from plants and animals. These are all pieces of the natural world to which humans are constantly exposed, experiencing both their positive and negative effects. When air, water, and food sources become polluted or contaminated, the benefits of exposure to natural elements are compromised. Not only does the natural environment deteriorate because of contaminants, but as a result consumers experience health problems. For example, food consumption and diet are influenced by food availability, price, and marketing. When there is a severe change in weather and temperature, low-income people are disproportionately affected by resultant shifts in the food market. They are unable to afford expensive, fresh foods and therefore are more likely to consume highly processed foods that can lead to obesity or CVD. Steps are being taken to address this issue. The European Commission–funded project “SPREAD Sustainable Lifestyles 2050” (2012) reported that global awareness of healthy eating habits and diet is growing, which may help reverse poor lifestyle behaviors related to health and the natural environment.

Different from the natural environment, the built environment includes human-created elements such as housing, neighborhoods, power plants, and traffic. Traffic has been linked to health and environmental sustainability because of its many negative externalities: air pollution (which can lead to serious lung problems) and stress (which has been linked to CVD). The environment in which one works and lives is an essential factor in one’s overall well-being, including the health of others who share that environment. Low-quality conditions indoors can have serious effects on health. These negative effects include increased risk of infectious diseases, such as tuberculosis or typhoid, significantly higher infant mortality, and increased risk of depression, substance abuse, or being the victim of crime (due to lack of security or barricades). Human behavior and choice have and will always play a crucial role in public health, but it also takes the efforts of leaders and organizations to ensure that people at all economic levels are given the opportunity to live full and productive lives.

Future Implications

Leading global health organizations do not always achieve a consensus regarding the best methodology

ACADEMIC MODEL PROVIDING ACCESS TO HEALTHCARE (AMPATH)

Academic Model Providing Access to Healthcare (AMPATH) is a partnership organization that unites North American and Kenyan health-care centers in a common vision of providing access to health care in a sustainable way. AMPATH provides a diverse set of services that empower patients, communities, and populations to achieve sustainable lives. All the needs of the patients—health, agriculture, economic improvement, and overall livelihood—are met by AMPATH staff.

The AMPATH consortium, established in 1997, partners Moi University School of Medicine and Moi Teaching and Referral Hospital in Kenya with several North American universities, including Duke University, Indiana University, and the University of Toronto. Originally, AMPATH was established as an organization that worked primarily with HIV/AIDS patients by way of the US Agency for International Development (USAID) funding. After seeing that patients suffering from HIV/AIDS also needed essentials such as access to healthy foods, AMPATH began to expand their services to a more inclusive approach to health. Patients are taught the importance of good nutrition and how to grow their own food. Patients’ actions are considered integral to adopting sustainable healthy behaviors to improve their quality of life. The people AMPATH serves are not seen merely as AIDS patients or expectant mothers; they are seen as part of the overall solution to managing all aspects of their lives from economic well-being to health.

In addition to their hands-on health-care delivery, AMPATH professionals and students produce academic research and conduct presentations around the world to inform future leaders, scholars, and policymakers about the health issues facing developing countries.

for tackling pressing global problems. They do agree, however, on the need for greater public awareness of health issues. Creating greater public awareness may require multisectorial action and participation from all levels of government and local organizations. Health interventions alone cannot rid developing countries of the health problems they face. Governmental coordination and partnerships with NGOs may help increase awareness and give poor communities the resources they need to make healthy decisions and to care for their families. Worldwide coordination may also improve the reporting and monitoring that ultimately will evaluate progress and unite the global community around a shared agenda and effective policy implementation.

Environmental improvements aimed at sustainability, such as building efficient public transportation systems and investing in clean energy, can ultimately contribute to better health. For example, reductions in traffic contribute to lower levels of air pollution as well as decreases in road traffic injuries and deaths. Health effects from exposure to GPBs and harmful elements in the natural or built environment are not always immediate and direct. Some become apparent only years after exposure. This implies a need for ongoing investment and research in order to find the most effective interventions to make sustainable development in low-income countries a reality. NGOs that strive to address the needs of low-income populations must evolve from organizational models that limit their ability to serve diverse populations to multisectorial models. One such NGO is the Academic Model Providing Access to Healthcare (AMPATH), discussed in the sidebar. Adopting a holistic organizational framework will diversify organizations as they begin to face new global challenges in the twenty-first century.

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See also Drought; Empowerment of Women; Environmental Justice; Food Security; Health and the Environment; Health Care; Pollution; Poverty; Water Access and Sanitation.

Resources

- Academic Model Providing Access to Healthcare (AMPATH). Available from <http://www.ampathkenya.org/>
- Caballero, Benjamin. 2005. "A Nutrition Paradox: Underweight and Obesity in Developing Countries." *New England Journal of Medicine* 352 (15): 1514–1516.
- European Commission. 2012. "Sustainable Lifestyles: Today's Facts & Tomorrow's Trends." Baseline Report from SPREAD Sustainable Lifestyles 2050. Available from http://www.sustainable-lifestyles.eu/fileadmin/images/content/D1.1_Baseline_Report.pdf
- Gardiner, Rosalie, and Katell Le Goulven. 2002. "Sustaining Our Global Public Goods." World Summit 2002 Briefing Paper. Johannesburg, South Africa. Available from <http://www.worldsummit2002.org/texts/Globalpublicgoods-briefing.pdf>
- Harpham, Trudy, and Catherine Molyneux. 2009. "Urban Health in Developing Countries: What Do We Know and Where Do We Go." *Health and Place* 15 (1): 107–116.
- Institute of Medicine. 2010. *Promoting Cardiovascular Health in the Developing World: A Critical Challenge to Achieve Global Health*. Washington, DC: National Academies Press. Available from <http://www.ncbi.nlm.nih.gov/books/NBK45693/>
- Kates, Jen; Adam Wexler; and Allison Valentine. 2011. "Donor Funding for Health in Low- and Middle-Income Countries, 2002–2009." Kaiser Family Foundation. Accessed February 15, 2012. Available from <http://www.kff.org/globalhealth/upload/7679-05.pdf>
- Obaid, Thoraya Ahmed. 2009. "Fifteen Years after the International Conference on Population and Development: What Have We Achieved and How Do We Move Forward?" *International Journal of Gynecology and Obstetrics* 106 (2): 102–105.
- Stern, David I. 2004. "The Rise and Fall of the Environmental Kuznets Curve." *World Development* 32 (8): 1419–1439. Rensselaer Working Papers in Economics. Available from <http://www.economics.rpi.edu/workingpapers/rpi0302.pdf>
- UNAIDS. 2009. "AIDS Epidemic Update." Accessed February 8, 2012. Available from <http://www.unaids.org/en/data-analysis/epidemiology/2009aidsepidemicupdate/>
- "World Development Report 1993: Investing in Health, Vol. 1." World Bank. Accessed January 6, 2012. Available from <http://www.wdronline.worldbank.org>
- World Health Organization. 2008. "The Global Burden of Disease: 2004 Update." Accessed December 27, 2012. Available from <http://www.who.int>
- World Health Organization. 2009. "State of the World's Vaccines and Immunizations." 3rd ed. Accessed January 15, 2012. Available from <http://www.who.int/immunization/sowvi/en/>

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Domestic Violence see *Empowerment of Women*

Drinking Water see *Water Access and Sanitation; Water Security*