

Environmental Trends

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For the past 30 years, prognosticators have predicted an imminent environmental apocalypse. Comparing actual events to the predictions reveals a different picture.

Human Life Span

The prognosticators often suggest that modern human-made chemicals undermine public health. Yet as chemical use has increased, the lives of humans have lengthened:

This brief provides only a sampling of key environmental trends. For additional information, see the other topical briefs in *The Environmental Source*, particularly the sections on air, water, drinking water, population, pesticides and agriculture, and chemical risk.

- In 1900, the average life expectancy in the United States was 50 years.¹ Now it is 77.9 years.²
- Cancer mortality has declined sharply since 1990 because of a precipitous decline in lung cancer. Mortality caused by all forms of cancer besides lung cancer has declined since 1950.³

1. Steven Moore and Julian L. Simon, *It's Getting Better All the Time* (Washington, DC: Cato Institute, 2000), 26.

2. Arialdi M. Miniño, Melonie Heron, and Betty L. Smith, "Deaths: Preliminary Data for 2004," Health E-Stats, National Center for Health Statistics, Hyattsville, MD, April 19, 2006, <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/prelimdeaths04/preliminarydeaths04.htm#fig1>.

3. Brad Rodu and Philip Cole, "The Fifty-Year Decline of Cancer in America," *Journal of Clinical Oncology* 19, no. 1 (2001): 239–41. See also the brief on cancer trends, also in *The Environmental Source*.

Land

Today some complain that we are carelessly destroying our habitat by destroying natural resources at ever-increasing rates. The data indicate otherwise:

- In the early part of the 20th century, people cut down twice as many trees as they planted. Today the United States grows 36 percent more trees than it harvests.⁴
- Some researchers estimate that there are more trees in North America now than when Columbus arrived in 1492.⁵
- Part of the reason for this surge in forest growth is decreased dependence on wood for fuel and construction. Per capita, Americans now consume half the wood they consumed in 1900.⁶
- In the six forest inventories taken between 1950 and the present, net forest growth in the United States, the world's number one timber producer, always exceeded harvests.⁷

Food Production

Changes in agriculture, such as improved plants and the use of pesticides and fertiliz-

ers, have created a worldwide boom in food production:⁸

- The United States feeds three times the number of people that it fed in 1900, but it uses 33 percent less farmland to do so.⁹
- Worldwide, the amount of food produced per acre has doubled in the past 50 years. Even though global population increased by 250 percent in those years, the amount of cropland increased by only 90 percent.¹⁰
- Enough food exists to distribute more than four pounds to each person on Earth every day.¹¹
- Fewer people died from famine in the 20th century than they did in the 19th century, even though the world population was four times greater at the close of the 20th century than at its beginning.¹²

Wildlife

Making land more productive through modern agricultural practices has freed more land for wildlife uses:¹³

- The number of documented animal extinctions has declined since 1930.¹⁴

4. Roger A. Sedjo and Marion Clawson, "Global Forests Revisited," in *The State of Humanity*, ed. Julian Simon (Cambridge, MA: Blackwell, 1995), 328–45.

5. Ibid.

6. Lynn Scarlett, "Doing More with Less: Dematerialization—Unsung Environmental Triumph?" in *Earth Report 2000*, ed. Ronald Bailey (New York: McGraw-Hill, 2000), 42.

7. Roger A. Sedjo, "Forests: Conflicting Signals," in *True State of the Planet*, ed. Ronald Bailey (New York: Free Press, 1995), 177–209.

8. Dennis Avery, "Saving the Planet with Pesticides," in *True State of the Planet*, ed. Ronald Bailey (New York: Free Press, 1995), 50–82.

9. Moore and Simon, *It's Getting Better All the Time*, 94.

10. Ibid., 196.

11. Ibid.

12. Ibid., 8.

13. Avery, "Saving the Planet with Pesticides," 71–73.

14. Stephen R. Edwards, "Conserving Biodiversity," in *True State of the Planet*, ed. Ronald Bailey (New York: Free Press, 1995), 212.

- Three-fourths of all species extinctions have occurred on islands. Very few extinctions have occurred in continental tropical forest habitats.¹⁵
- Seventy-five percent of the land on every continent except Europe is available for wildlife.¹⁶
- Sulfur dioxide emissions decreased by 47 percent between 1980 and 2006.²¹
- Particulate matter (size at 10 micrograms per liter) emissions decreased by 38 percent between 1980 and 2006.²²
- Particulate matter (2.5 micrograms per liter) emissions decreased by 44 percent between 1990 and 2006.²³
- Carbon monoxide emissions decreased by 50 percent between 1980 and 2006.²⁴
- Lead emissions decreased by 96 percent between 1980 and 2006.²⁵

Air Quality

In the past 20 years, air quality in the United States has undergone impressive improvements:

- Between 1990 and 2002, toxic air emissions declined by 35 percent.¹⁷
- According to the U.S. Environmental Protection Agency (EPA), between 1970 and 2006, gross domestic product increased by 203 percent, vehicle miles traveled increased by 177 percent, energy consumption increased by 49 percent, and the U.S. population grew by 46 percent. During the same time period, total emissions of the six principal air pollutants dropped by 54 percent.¹⁸
- Nitrogen dioxide emissions decreased by 41 percent between 1980 and 2006.¹⁹
- Volatile organic compound emissions decreased by 51 percent between 1980 and 2006.²⁰

These changes can all be attributed to the Clean Air Act, right? Not necessarily: as Paul Portney, president of Resources for the Future notes, it is “extremely difficult to isolate the effects of regulatory policies on air quality, as distinct from the effects of other potentially important factors, because some measures of air quality were improving at an impressive rate before 1970.”²⁶ Indur Goklany, an analyst at the U.S. Department of the Interior, expands on this point in *Clearing the Air*. Through analysis of emissions per capita per unit of the gross national product (GNP), Goklany reveals that the cleanup of the air began well before the passage of the Clean Air Act. In fact, Goklany estimates that about 70 percent of the reduction of emissions per unit of GNP occurred before the federalization of clean air. Economic growth and new technologies, as well as state and local

15. Ibid., 218.

16. Ibid., 223.

17. U.S. Environmental Protection Agency, “Air Emissions Trends—Progress Continues in 2006,” Washington, DC, EPA, <http://www.epa.gov/airtrends/econ-emissions.html>.

18. Ibid.

19. U.S. Environmental Protection Agency, “Air Trends: Basic Information,” Washington, DC, EPA, <http://www.epa.gov/airtrends/sixpoll.html>.

20. Ibid.

21. Ibid.

22. Ibid.

23. Ibid.

24. Ibid.

25. Ibid.

26. Paul R. Portney, “Air Pollution Regulation,” in *Public Policies for Environmental Protection*, ed. Paul R. Portney, (Washington, DC: Resources for the Future, 1990), 40.

laws, brought about this reduction in pollution, which likely would have continued even if the federal government hadn't intervened.²⁷

Water Quality

The EPA's National Water Quality Inventory (NWQI) provides the best available data for water quality. According to the EPA report, 46 percent of the lakes and ponds sampled, 47 percent of the estuaries, and 55 percent of the streams and rivers are clean enough for any use.²⁸ However, there are severe problems with these data. Unlike air quality data in the United States, water quality data lack "consistent measurement standards to enable evaluation of progress over time."²⁹ The number of water bodies assessed—indeed, the estimated number of water bodies—in a state varies widely from year to year. The EPA itself admits that the data collected under its own NWQI "cannot be used to determine trends in national water quality or to compare water quality among the individual states."³⁰ The U.S. Geological Survey

also has complained about the deficient data and practices.³¹

In the past 30 years, the United States has spent almost \$600 billion on improving water quality, so it would be surprising if water quality hadn't improved in those decades,³² especially as industrial water pollution has decreased considerably since 1980. The discharge of toxic organics and metal plummeted by 99 percent and 98 percent, respectively, and the discharge of organic wastes fell by 46 percent.³³ Just as the lack of overall data quality hampers a true assessment of water quality, it also obscures the evaluation of water pollution remedies.

Drinking Water

The quality of U.S. drinking water has improved dramatically since the beginning of the 20th century, thanks to technology developed by the private sector and implemented by private utilities and local governments. By the time the federal government began to regulate drinking water, the private sector and local governments had largely addressed the most serious water problems. The development of chlorination to disinfect water has particularly transformed water quality:

- As one researcher notes, "disinfection ranks with the discovery of antibiotics as one of the major public health accomplishments of the 20th century. In terms of risk, chlorina-

27. Indur M. Goklany, *Clearing the Air: The Real Story of the War on Air Pollution* (Washington, DC: Cato Institute, 1999), 133–39. Goklany does give some credit to federal law for the amount and pace of the pollution reduction occurring after 1970.

28. U.S. Environmental Protection Agency, "Water Quality Conditions in the United States: A Profile from the 1998 National Water Quality Inventory," EPA-41-F-00-006, Washington, DC, EPA, June 2006, <http://www.epa.gov/305b/98report/98summary.pdf>.

29. Laura Steadman, "Water Quality," in *Index of Leading Environmental Indicators 2000*, ed. Steven Hayward, Elizabeth Fowler, and Laura Steadman (San Francisco: Pacific Research Institute for Public Policy, April 2000), 29, <http://www.pacificresearch.org>.

30. Ibid.

31. Ibid.

32. Ibid., 31.

33. Steven Hayward, Erin Schiller, and Elizabeth Fowler, eds., *1999 Index of Leading Environmental Indicators* (San Francisco: Pacific Research Institute for Public Policy, April 1999), 28–29, <http://www.pacificresearch.org>.

tion has allowed people to live long enough to worry about cancer.”³⁴

- Since the 1880s, when local engineers and industry introduced chlorination, deaths in the United States related to waterborne causes dropped from 75 to 100 per 100,000 people to less than 0.1 deaths per 100,000 annually by 1950.³⁵
- In 1900, 25,000 people in the United States died from typhoid and cholera. Because of water disinfection programs, typhoid killed only 20 people in 1960. Today typhoid deaths in the United States are practically nonexistent.³⁶
- The inability of developing nations to afford basic sanitation and disinfection means that the quality of drinking water remains a serious environmental and public health concern in many areas. Such realities show that development and subsequent wealth creation are critical to achieving environmental goals and public health.

Energy

Improved exploration and extraction techniques have increased the size of fossil fuel reserves and lowered the price of energy during the 20th century:

- Recent evaluations demonstrate that proven reserves of natural gas and oil are larger than they were 30 years ago.³⁷
- Since 1929, it has taken 1 percent less energy each year to produce the same amount of goods and services. By 1989, the amount of energy needed to produce \$1 of GNP was 50 percent less than the amount of energy needed 60 years earlier.³⁸

Population

Since 1798, when the Reverend Thomas Malthus wrote *An Essay on the Principle of Population*, if not before, doomsayers have predicted that the sheer number of people in the world would destroy the Earth. Not only have these dire predictions failed to acknowledge the positive contributions that human capital has made to our lives, but they also have been proven wrong time and time again. And as humans provide for themselves, trends in population growth are beginning to level off:

- The world population growth rate has dropped to 1.3 percent a year from its peak of 2.2 percent in the 1960s.³⁹
- Demographers believe that half of the world’s population lives in countries that

34. I. H. Suffet, “Drinking Water Quality,” in *Southern California Environmental Report Card 2000*, ed. Richard Berk and Arthur Winer (Los Angeles: University of California–Los Angeles Institute for the Environment, 2000), <http://www.ioe.ucla.edu/publications/report00/html/drinkingquality.html>.

35. Michael J. LaNier, “Historical Development of Municipal Water Systems in the United States, 1776 to 1976,” *Journal of the American Water Works Association* 68, no. 4 (1976): 177

36. Jefferson Parish Water Department, *Jefferson Parish Annual Water Quality Report* (Jefferson, LA: Jefferson Parish Water Department, 2001).

37. Jerry Taylor and Peter Van Doren, “Soft Energy versus Hard Facts: Powering the Twenty-First Century,” in *Earth Report 2000*, ed. Ronald Bailey (New York: McGraw-Hill, 2000), 121.

38. *Ibid.*, 192; see also, Eugene Gholz and Daryl G. Press, *Energy Alarmism The Myths That Make Americans Worry about Oil*, Policy Analysis no. 589 (Washington, D.C.: Cato Institute: April 5, 2007), <http://www.cato.org/pubs/pas/pa589.pdf>.

39. Nicholas Eberstadt, “World Population Prospects for the Twenty-First Century: The Specter of ‘Depopulation?’” in *Earth Report 2000*, ed. Ronald Bailey (New York: McGraw-Hill, 2000), 66.

have subreplacement fertility levels. Fertility rates also are falling in countries that have above-replacement rates. Total fertility rates in Asia and Latin America have declined by half since the 1960s.⁴⁰

Wetlands

Despite claims that fewer and fewer wetlands exist, trends are far more positive:

- *Status and Trends of Wetlands in the Conterminous United States, 1986 to 1997*, a report by the Fish and Wildlife Service of the Department of the Interior, estimates that the annual loss is 58,500 acres, an 80 percent reduction compared with loss in the previous decade.⁴¹
- The *National Resources Inventory* of the United States Department of Agriculture found an average annual net loss from all sources of 32,600 acres of wetlands.⁴²
- When the buffered uplands that form part of the wetlands ecosystem are taken into account, the results are even more heartening: the United States seems to have achieved no net loss of wetlands.⁴³

In 1995, regulatory programs restored about 46,000 acres of wetlands. However, voluntary

or incentive-based programs, such as Wetland Reserve, Waterfowl Management Plan, and Partners for Wildlife, restored 208,000 acres. Thus, economic incentive programs, and not regulatory measures, led the way to no net loss of wetlands.⁴⁴

Future Challenges

Despite these gains, legitimate environmental and human problems exist, particularly in the developing world:

- Air pollution remains a serious issue in countries where the technologies of energy production lag those of the developed world. Of particular concern is indoor air pollution. Many people in poor countries still use biomass fuels, such as wood, as the energy source in houses without adequate ventilation. Such practices have severe effects on the health of those populations.⁴⁵
- Unclean drinking water and inadequate sanitation also remain major problems in the developing world. Four billion children a year contract diarrhea; 2.2 million die. Estimates indicate that improved water and sanitation would reduce the number of cases of diarrhea by at least one-fourth.⁴⁶

40. Ibid.

41. Thomas E. Dahl, *Status and Trends of Wetlands in the Conterminous United States 1986 to 1997* (Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service, 2000), 9, http://training.fws.gov/library/Pubs9/wetlands86-97_lowres.pdf.

42. U.S. Department of Agriculture, *National Resources Inventory* (Washington, DC: National Resources Conservation Service, 2000), 8, http://www.nrcs.usda.gov/TECHNICAL/NRI/1997/summary_report/.

43. Jonathan Tolman, *Swamped: How America Achieved No Net Loss* (Washington, DC: Competitive Enterprise Institute, April 1997), 2.

44. Ibid., 1–2.

45. Nigel Bruce, “Indoor Air Pollution: A Neglected Health Problem for the World’s Poorest Communities,” *Urban Health and Development Bulletin* 2, no. 2 (1999): 21–29. See also Ksenya Lvovsky, “Health and the Environment,” Strategy Paper no 1. (Washington, D.C.: World Bank: October 2001), 5–6.

46. World Health Organization, *Global Water Supply and Sanitation Assessment 2000 Report* (Geneva: WHO and UNICEF, 2000), http://www.who.int/water_sanitation_health/monitoring/globalassess/en/, 2.

- Vector borne disease continues to be another detriment to the health of people in the developing world.⁴⁷ Malaria alone kills more than 1 million people a year, most of whom are children. According to the World Health organization that amounts to a child dying from malaria 30 seconds.⁴⁸

History demonstrates that answers to these problems are to be found not through more ineffective regulatory programs, but through increasing human potential. Wealthier is healthier for people and for the environment. And the fastest way to make a nation wealthy is not by restricting commerce and trade, but by freeing it.

Recommended Readings

- Bailey, Ronald. *Global Warming and Other Eco-myths*. Roseville, CA: Prima Publishing, 2002.
- Hayward, Steven. *Index of Leading Environmental Indicators 2006: The Nature and Sources of Ecological Progress in the United States and the World*. Washington, D.C.: American Enterprise Institute, 2006, http://www.aei.org/books/filter.all,bookID.854/book_detail.asp
- Moore, Steven, and Julian L. Simon. *It's Getting Better All the Time*. Washington, DC: Cato Institute, 2000.

47. Duane J. Gubler, "Resurgent Vector-Borne Diseases as a Global Health Problem," *Emerging Infectious Diseases* 4, no. 3 (1998): 442–50, <http://www.cdc.gov/ncidod/eid/vol4no3/gubler.htm>.

48. World Health Organization, "Malaria," Fact Sheet No. 94, Geneva: World Health Organization, updated May 2007), <http://www.who.int/mediacentre/factsheets/fs094/en/index.html>.

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