

RESOURCES & ENVIRONMENT

*Changing winds
have brought
periodic droughts
to the Great
Plains.*



Adapted from Natural History.

rainfall 20 to 30 percent through the end of the century. According to Bryson, the weather would have wiped out three-fourths of the bison had white settlers and sportsmen not slaughtered them first.

Changes in air-stream patterns probably caused both dry spells. Westerly winds from the Pacific Ocean lose their moisture as they travel through three passages of the Cordilleras (the range that includes all the mountains from the Rockies to the Pacific) on their way to the Great Plains. During the summer, they mix with moist tropical air from the south to produce showers and raise humidity. During the winter, dry arctic air prevents this tropical air from reaching the Plains. In the 13th century, writes Bryson, the arctic air mass expanded and dramatically reduced summer rainfall throughout the Great Plains and the Southwest.

These shifts occur periodically, producing droughts of varying duration. During the last 3,600 years, the northern edge of Canada's forests has crept north and south four times within a 200-mile zone as arctic air masses expanded and contracted. Bryson reports that recent rainfall patterns on the Plains closely resemble those of the bone-dry 13th century. His troubling analysis: The American grain belt is either coming out of a very short dry spell or entering a very long one.

Energy: The Population Factor

"The Demographics of Energy" by Reid T. Reynolds, in *American Demographics* (June 1980), Circulation Dept., American Demographics, Inc., P.O. Box 68, Ithaca, N.Y. 14850.

The post-World War II Baby Boom, the shrinking family, the growth of the Sunbelt—all are likely to affect America's demand for energy through the end of the century, reports Reynolds, former senior editor

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of *American Demographics*.

From 1960 to 1970, per capita energy consumption in America jumped 2.9 percent annually. But during the 1970s, total energy demand grew only 10 percent—a mere 1 percent per capita annual gain. If this trend continues, the projected 1995 U.S. population of 253 million will need only 37 percent more energy than it does today, not the 88 percent more that scholars once predicted based on 1960s growth rates.

Yet aggregate figures are only part of the story. Different age groups consume energy at different rates. Children up to the age of 19 and senior citizens over 65 use little energy. The elderly, for example, tend to live in small homes, seldom travel, and frequently reside in mild climates. The young and old will account for roughly 31 and 12 percent of the population, respectively, from now until 1995. America's biggest energy users are working age adults, aged 20 to 64. Their numbers, swollen by the Baby Boom, will continue to account for 57 percent of the population.

Moreover, recent changes in conventional family structure will probably boost per capita energy consumption. More working wives create higher household incomes; and in 1975, households with \$30,000 to \$35,000 incomes spent 52 percent more on energy for heating and transportation than those living on \$10,000 to \$15,000. The growing ranks of singles tend to inhabit condominiums and apartments—which use 38 percent less energy than one family homes. But singles also create *more* households to heat, cool, and furnish with appliances.

The effect of migration to the Sunbelt states on energy consumption is unclear. Most homes in the South and West, which burn natural gas, have lower heating and cooling bills than older homes in the North and East heated by imported oil. The average Boston home, for example, cost \$1,052 in 1979 to heat versus only \$420 for its counterpart in Houston. But the average Houston resident fills up with 671 gallons of gas annually for private transportation compared with 426 gallons purchased by the average Bostonian.

Reynolds suggests that a larger, more geographically dispersed population and a continuing push for higher living standards will reverse the energy use trends of the 1970s and boost American demand by the end of this century.

Europe's Nuclear Fast Track

"How Prometheus Came to be Bound: Nuclear Regulation in America" by Michael W. Golay, in *Technology Review* (June-July 1980), Room 10-140, Massachusetts Institute of Technology, Cambridge, Mass. 02139.

Western European nations regulate nuclear-plant construction in a manner that Americans would do well to heed. So asserts Golay, a nuclear-engineering professor at MIT.

The U.S. Congress has repeatedly declined to set health and safety standards for nuclear plants. This politically touchy task has fallen to