

RESEARCH REPORTS

Reviews of new research by public agencies and private institutions

“Coal—Bridge to the Future.”

Report of the World Coal Study. Ballinger Publishing Co., 17 Dunster St., Cambridge, Mass. 02138. 247 pp. \$12.50

Author: Carroll L. Wilson et al.

A study involving researchers from 16 nations and headed by MIT economist Carroll L. Wilson indicates that the world economy can continue steady growth for the next 20 years — provided that annual global coal output reaches 11.2 billion metric tons, more than triple the 1977 level. This goal, says the authors, can be achieved handily.

If energy consumption matches population growth, the world will use the equivalent of nearly 190 million barrels of oil per day in the year 2000 — 50 percent more than in 1978.

The OPEC nations, which produce nearly half the world's oil and also control substantial reserves, have decided to limit their production to the present level of 30 million barrels per day. New exporters such as Mexico and China seem to be unwilling or unable to fill the gap.

Conservation can cut the West's annual energy consumption by only 25 percent by the year 2000, the authors estimate. Further nuclear power development and renewable energy sources such as solar, wind, and water power are expected to make only marginal contributions.

Coal already supplies 26 percent of world energy needs. Six hundred sixty billion metric tons of recoverable coal lie beneath some 80 countries. The United States (with 20 percent), the Soviet Union (with 16.6 percent), China (with 15 percent), and Australia (with 9.4 percent) are the best endowed. If the study's 11.2 billion metric ton target is met, cumulative coal production from 1977 to 2000

would use up a bare 16 percent of reserves. Soaring oil prices have increased coal's attractiveness. With imported oil prices now ranging from \$28 to \$37 per barrel, oil is more than twice as expensive to burn as coal.

The authors contend that the environmental hazards of coal are manageable. West Germany, for instance, has successfully and cheaply reclaimed land furrowed by strip mining. Sulfur dioxide and nitrogen emissions from burning coal—causing respiratory and other diseases—can be controlled by chemically reducing coal's sulfur content. And no proof yet exists that increased coal use will dangerously warm the Earth's atmosphere—although burning coal releases 25 percent more carbon dioxide than burning oil.

To reach the targets set forth in the study, the United States and Australia will have to supply half the 1 billion metric tons of coal exports the world will need in 20 years. (They produced 43 percent of the 200 million metric tons of coal traded internationally in 1977.) The total cost of opening new mines, building new coal ships, and improving railroads, harbors, and slurry pipelines could approach \$1 trillion—a small fraction of the \$38 trillion worth of new capital the Western democracies are expected to create by the end of the century.

Because new coal mines and transportation systems take 5 to 10 years to complete, the authors argue that the West must work fast: “Our most precious resource is time, which must be used as wisely as energy.”

land's losses are, relatively, about twice as high.) But Cincinnati's budget is currently balanced. Why? The authors cite the willingness of Cincinnatians to raise taxes (they upped the local income tax to 1.7 percent in 1970). Tax revenue has grown 8 percent annually since 1973.

Cincinnati's government is also streamlined. Elected "at large," the nine-member city council selects one of its members to be mayor. Less apt to be diverted by internal feuding, Cincinnati's leaders have created a solid partnership with the Hamilton County government and with the suburbs. The county, for example, contributes \$1 million each year to the

city for bridge repairs.

When Cincinnati's voters finally rejected a major tax increase, in 1976, the city government was prepared. Cincinnati's managers scaled down the city workforce and services, and shifted their spending priorities away from new construction and toward maintenance.

This change will enable Cincinnati's leaders to continue infrastructure repairs even if the city budget shrinks further. But Cleveland is likely to pay for its decision to delay needed maintenance. "It is analogous to a pay-as-you-go pension system," say the authors, "which is a bargain in the present but expensive in the future."

"Rising Infant Mortality in the U.S.S.R. in the 1970s."

International Population Reports, Series P-95, No. 74, U.S. Bureau of the Census, Subscriber Services Division, Data User Services, Washington, D.C. 20233. 95 pp.

Authors: Christopher Davis and Murray Feshbach

Infant deaths have been rising annually in the Soviet Union—from 22.9 per thousand live births in 1971 to 31.1 per thousand in 1976. This is the first sustained increase ever suffered by an industrialized nation, according to information pieced together by Davis, a Soviet health care specialist at the University of Birmingham, England, and Feshbach, a U.S. Census Bureau demographer and Wilson Center Fellow.

If Western reporting standards are used (the Soviets, for example, classify all infants who die by the seventh day after birth as miscarriages), the U.S.S.R.'s infant mortality rate is even higher, 35.6 per thousand for 1976—more than twice the U.S. rate of 15.1 per thousand.

The worst rates are found in backward, heavily Muslim Soviet Central Asia. Dushanbe, capital of the Tadzhik Republic, suffered 51.8 deaths per

thousand births in 1974. Infant deaths are rarest in the modernized Russian heartland. The city of Minsk boasted the lowest 1974 infant mortality rate—15.7 deaths per thousand.

Soviet health officials often attribute the statistical rise to more accurate census techniques. But Davis and Feshbach note that census-taking improvements made before 1970 failed to produce similar jumps.

Instead, the authors point to worsening environmental pollution, exceptionally virulent influenza epidemics between 1971 and 1976, and overcrowded, understaffed child-care facilities as the principal causes. Skimpy available evidence indicates that the main killers of Soviet infants are pneumonia and diet-related diseases such as rickets.

Pollution from past nuclear testing and industrial waste may exact an additional toll on the Soviets, note Davis

and Feshbach. One dissident report claims that the numbers of children born with genetic defects are growing by 5 to 6 percent annually. Currently estimated at 8 percent of the population, the proportion of retarded persons in the Soviet Union could reach an astronomical 15 percent by 1990.

"Another Revolution in U.S. Farming?"

U.S. Department of Agriculture, Washington, D.C. 20250. 445 pp.
Authors: Lyle P. Schertz et al.

Dramatic changes in organization and management that are transforming American farms today may represent this country's third agricultural "revolution," says Schertz, an economist at the U.S. Agriculture Department. The first two revolutions were the introduction of horse-drawn mechanical equipment such as the McCormick reaper [in the early 19th century] and the introduction of the gasoline-powered tractor [in the 1890s].

For nearly 50 years, farms in the United States have been becoming fewer and larger. During the mid-1930s, the number of American farms peaked at nearly 7 million; by 1978, there were fewer than 2.7 million. But the total amount of U.S. land devoted to farming today has changed only slightly in 40 years (and now stands at 370 to 380 million acres).

Most farms (89 percent) today are owned by individuals, as has been the case historically. Another 9 percent are owned in partnership. Only 28,000 farms are owned by corporations, but these are larger and rack up bigger sales than the average farm. In 1974, family corporations (where persons related by blood or marriage control at least 51 percent of the stock) owned 1.3 percent of American farms, accounting for 7.8 percent of the farmland and 9.1 percent of farm product sales. Publicly held corporations, with only 0.06 percent of the farms, held 0.6 percent of the land and accounted for 3.4 percent of the sales.

More than one-fifth of all farming corporations in the mid-1970s were in

California, Florida, and Texas, with 10 percent located in California alone. Nationally, corporate farms dominate beef, poultry, and vegetable production, accounting for at least 28 percent of the sales of each commodity.

Numerous forces are responsible for these changes. During periods of inflation, land prices often rise faster than other prices, spurring business and wealthy individuals to invest in farmland. Sustained foreign demands for American agricultural products has removed restraints on acreage allotments, while increased grain and soybean exports (especially the large wheat sales to the Soviet Union during 1972-74) have sharply increased domestic farm incomes. Meanwhile, technological advances (e.g., four-wheel-drive tractors, electronically controlled harvesters, disease-controlling drugs) have lowered unit production costs.

The trend toward large farms is likely to continue until the end of the century, predict the authors, especially if inflation keeps rising. In the near future, increased energy costs for irrigation and transportation may reduce the profitability of big farms and shift much farming activity from the West to the North, where farms have always been smaller. Still, ownership of agricultural land by public corporations with ample funds to invest, is apt to increase in the long run. By the year 2000, the number of farms in the United States could drop to 1 million, with as few as 70,000 farms accounting for one-half of total farm sales.

"Public Attitudes and Information on the Nuclear Option."

Institute for Energy Analysis, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, Tenn. 37830.

Author: M. W. Firebaugh

After the March 1979 accident at Three Mile Island, near Harrisburg, Pa., more people judged nuclear power plants to be relatively safe than had thought so the previous autumn. This is just one surprising finding reported by Firebaugh, a University of Wisconsin physicist, in a study of public opinion on nuclear energy issues.

In a Harris poll taken in October 1978, 64 percent of the public described nuclear plants as either "very safe" (26 percent) or "somewhat safe" (38 percent). But the following April, after Three Mile Island, 21 percent of respondents to a similar poll rated nuclear plants as "very safe," and a hefty 46 percent as "somewhat safe"—a 67 percent total. Those who considered nuclear plants to be "not so safe" or "dangerous" increased by only 2 percentage points—from 28 to 30 percent of the sample.

The Three Mile Island accident polarized public views on nuclear power, contends Firebaugh. After an immediate nose dive, popular support for building more nuclear plants returned, by August 1979, to within two points of its preaccident level of 58 percent. Opposition to new construc-

tion, however, showed a sustained increase, from 30 percent in September 1978 to 40 percent in August 1979, as the proportion of undecided respondents declined from about 20 percent to 8 percent.

Public acceptance of nuclear power depends strongly on perceptions of cost, asserts Firebaugh. When told that nuclear energy would be 20 percent more expensive than other kinds of fuel, only 23 percent of Americans surveyed expressed support for building plants in their community. Informed that nuclear power would cost the same as other energy sources, 55 percent favored nearby plant construction, with nearly 80 percent in favor when nuclear power was described as 20 percent cheaper than alternatives.

One not-so-impartial pollster, Paul Slovic, has concluded that, in matters of nuclear safety, the public's views "are extraordinarily persistent in the face of contrary evidence." Nuclear issues are highly symbolic, writes Firebaugh. To many Americans, nuclear energy represents a noble effort to harness nature in line with growth and progress.