



A Dangerous Trade: Saving Wood by Burning Coal

Update

June 30, 1995

*East-West Center
1777 East-West Road
Honolulu, Hawaii 96848
Telephone: 808-944-7111
Fax: 808-944-7376*

*East-West Center Updates
provide timely information on
current issues for use by journal-
ists, scholars, government offi-
cials, business executives, and
others concerned with Asia, the
Pacific, and the United States*

*Kirk Smith is a senior fellow in the
East-West Center's Program on
Environment and a professor at the
University of California, Berkeley.*

KIRK R. SMITH

Senior Fellow, East-West Center

Telephone 808-944-7519; fax 808-944-7298

Many developing countries are turning to coal—and away from wood—for household cooking in order to slow the process of deforestation without increasing the use of imported oil. International development agencies are supporting this tradeoff. But the countries and agencies should reconsider, since the tradeoff risks severe health effects.

People around the world have traditionally moved up an “energy ladder” from biomass fuels—wood if they can get it, crop residues or twigs, grass, and dung if they cannot—to simple fossil fuels such as kerosene and bottled gas. But some countries are reluctant to encourage this progression; they worry about fluctuations in the price and supply of petroleum fuels and about finding enough hard currency to buy them—as well as about the security implications of becoming dependent upon imported fuels. On the other hand, biomass resources such as wood are becoming scarce due to population pressure and deforestation. Countries can try to solve this new “energy crisis” by providing more biomass—for example with fuel wood plantations—but good land is scarce and wood is needed for other purposes (and other biomass such as crop residues and dung may be more urgently needed as fertilizer). Another option is to make better use of existing biomass by providing more efficient stoves, but this strategy can go only so far.

A Smothering Home Environment

For these reasons, many countries are considering substituting another solid fuel, increasingly coal, for household use. The Agency for International Development has listed 17 countries—including Pakistan, Bangladesh, Indonesia, and Haiti, and a number of other countries in Africa and Asia—as having potential to use coal for household burning. Another international group, the United Nations Industrial

Continued on page 2

The U.S. Congress established the East-West Center in 1960 to foster mutual understanding and cooperation among the governments and peoples of the Asia-Pacific region, including the United States. Principal funding for the Center comes from the U.S. government, with additional support provided by private agencies, individuals and corporations and more than 20 Asian and Pacific governments. The Center promotes responsible development, long-term stability and human dignity for all people in the region and helps prepare the United States for constructive involvement in Asia and the Pacific.

Development Organization, has been helping India examine this option. Using coal has seemingly obvious advantages for a country like Pakistan, which does not have enough coal to satisfy its industrial needs but has enough to provide household fuel and, therefore, reduce petroleum imports. In China, where coal is already widely used by urban households, authorities are considering expanded use in rural areas, where biomass is still the primary fuel.

These countries and agencies, however, should look at the health problems stemming from widespread coal use in Eastern Europe and especially China, where hundreds of millions of people use coal stoves and dozens of studies have demonstrated their dangers. Non-smoking Chinese women exposed to coal smoke have elevated lung cancer rates that sometimes match those of women smokers, as well as high rates of stroke, mouth and throat cancer, chronic lung disease, and other problems. Other countries have seen similar problems. In South Africa, black townships denied access to clean fuel have had to use dirty coal, and as a result many children have suffered acute respiratory problems including pneumonia (a chief killer of the young).

The past experience of developed countries also provides a cautionary tale. Coal was used in British households for centuries with devastating effect; in fact, the world's first known air pollution review committee was established in London in 1285 to find a solution to "smoggy Londontown." After deliberating for 21 years, the panel decided that the only solution was to ban the burning of coal in downtown London—a recommendation ignored for about 600 years. Decisive action came only after the devastating London Smog of 1952, a dense fog mixed with coal smoke that settled on the city during unusually calm weather conditions and caused some 4,000 deaths over a few days. Today, few seem to remember that coal-burning household stoves caused the disaster. At the time, factories and other large coal users were somewhat controlled, but household stoves had continued to release their smoke through chimneys near ground level ■

Clearing the Air

Coal is especially dangerous when burned in small stoves because, although the amount of smoke may be minuscule by

industrial standards, it is closer to the people affected. This is also a problem with wood-burning stoves, but the health impacts of indoor coal are much worse. Some mitigating measures may be taken; as a first step, better ventilation must be encouraged in homes in which coal is used. Many homes in Africa and South Asia lack even a chimney to carry smoke outside the home, and installing one can lessen the impact on users—although it will not help their neighbors, since coal smoke can form dense fogs and affect others in the area.

Another step will be to improve the design of the fuel/stove combination. For example, coal can be formed into briquettes that burn more completely and used in stoves that have been especially designed for them. Households can be provided with coal that is low in sulfur and volatiles (substances that evaporate easily and, therefore, put pollutants into the air) and that does not contain dangerous substances such as fluorine, mercury, or lead. Coal can also be "cleaned" by taking out some of the sulfur by washing or chemical treatment, and then adding lime to capture additional pollutants. Heating the coal can reduce the hydrocarbon levels that make some coals so smoky; South Africa, for example, is launching an ambitious low-smoke coal project in its townships.

Ultimately, however, the answer may be the same one recommended six centuries ago in London—a complete ban on the burning of coal in households. Some will argue that without coal as a fuel option, both deforestation and oil prices will rise as people substitute wood or petroleum-based fuels such as kerosene. But there are other options. In India, for example, a slight drop in the growth of the automobile fleet—currently increasing 14 percent per year—would free enough petroleum to cover all household use. Or authorities could concentrate on making smokeless liquid or gas fuels out of petroleum, biomass—or even coal—which is expensive but possible. In the long run, substituting coal for wood on a broad scale may help the economy and natural environment at the cost of more deaths and illnesses in another environment—the one around the household stove ■