

AFRICA**DEFORESTATION AN 'ECOLOGICAL CHALLENGE'**

[AN] Oil, coal and gas precede wood as the most important sources of energy worldwide, but in sub-Saharan Africa wood accounts for more than 75% of the fuel consumed. Consequently, the worsening firewood shortage that has long plagued the developing nations represents a life and death matter—a problem more critical in many ways than the discomfort caused to the industrialized countries since 1973 by rising oil prices.

The root of the trouble appears to be rapid deforestation, which the Worldwatch Institute calls "the most profound ecological challenge of the late twentieth century."

In poor countries some 90% of the population—about 1.3 billion people in 1975—depends

upon wood for the basic functions of cooking and heating. The average wood use per person in the less developed countries is over one ton each year, according to the UN Food and Agriculture Organization (FAO). However, in the Sahel countries—Mauritania, Senegal, Mali, Upper Volta, Niger and Chad—where deforestation is already severe, per capita consumption is estimated at only one-half ton annually.

While the scarcity of wood stems primarily from local demand for firewood, over-grazing and the cutting of timber for export also contribute to Africa's deforestation. In the 1960s the international timber companies began eyeing Third World forests as timber supplies and environmental controls tightened in North America and Europe. And in the press to provide investor dividends, whether the capital involved is primarily foreign or indigenous, the few efforts at reseedling have been insufficient.

The results of deforestation are topsoil erosion, siltation, and flooding. The land suffers reduced fertility, food production declines, and, eventually, the desert encroaches. When firewood is scarce, dried animal dung is often burned in its stead, depriving the soil of a valuable fertilizer and further accelerating the loss of food production.

An estimated 250,000 acres of land are lost each year to deforestation in north Africa. Ouagadougou, the capital of Upper Volta, is surrounded by a 45-mile wide denuded ring that increases in size every year. In northern Sudan the desert has extended southward by 63 miles in the past 17 years.

Women ultimately shoulder much of the burden of the firewood shortage, since they gather the wood for the family's needs in many societies. As resources near the village are depleted, the journeys to gather wood become longer, and larger loads are necessary on each trip. When the shortage is so severe that the women must foray more than 25 miles, it is

usually necessary to buy wood imported from another area, placing a strain on family finances.

"Uncontrolled deforestation," says Worldwatch researcher Erik Eckholm, "is usually a symptom of a society's inability to get a grip on other fundamental development problems: agricultural stagnation, grossly unequal land tenure, rising unemployment, rapid population growth and the incapacity to regulate private enterprise to protect the public interest."

Regional cooperation is one approach developing countries are taking to projects too complex or expensive for individual nations. Algeria, Tunisia, Libya, Morocco and Egypt, for example, are trying to coordinate their once-separate programs for the study and eventual control of deforestation. A similar cooperation effort, this one with \$2.8 million in UN funding, joins Kenya, Sudan and Tunisia.

The source of the problem, inefficient use of wood resources, is the focus of a unique program here in the United States at the Georgia Institute of Technology. In January 1978 the Engineering Experiment Station at the institute published a "State of the Art Survey of Solar-Powered Irrigation Pumps, Solar Cookers and Woodburning Stoves for Use in Sub-Saharan Africa." Earlier this year Georgia Tech hosted an international solar workshop including the 16 African countries that participated in the original survey. With the aim of reducing wood consumption, the conference emphasized technology already on the shelf.

Much of the wood and charcoal used in Africa is burned over open fires for cooking purposes. In Senegal, for example, more than 80% of the wood used is for cooking. Remarkably, the Georgia Tech survey estimates that at least 50% of the wood consumed in sub-Saharan Africa could be saved through the introduction of a simple wood stove—a potential savings of more than 50 million tons of wood per year.

The survey report included diagrams for a wood stove constructed from a five-gallon paint can and simple materials locally available in Africa, costing less than \$5 to construct. Yet J.D. Walton, co-author of the report, told AFRICA NEWS that nothing has been done with the plans because of the lack of a "technology exchange," effective cooperation with African villagers in developing a prototype.

There are other problems as well. One is the fact that the stove is best suited to charcoal, while many Africans burn wood directly. Another is the expense.

"Even if it takes eight hours to find enough wood, it doesn't cost anything but the time," Walton notes. "Once you start introducing these stoves, the money becomes a problem: Someone has to bear the cost."