9. THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

The proposed Kemper County IGCC Project's power plant and the connected lignite mine and linear facilities would occupy large amounts of land (although the mined lands would be reclaimed). The facilities would consume resources including lignite, natural gas, water, process chemicals, paints, degreasers, and lubricants (see Chapters 2 and 8). The proposed facilities would generate electricity, commercial-grade ammonia and H_2SO_4, CO_2 for EOR, along with air emissions, liquid effluents, and solid wastes. No process wastewater streams would be released off the power plant site; however, the mine facilities would discharge water from impoundment structures and effluent from a sanitary treatment plant. The impacts of constructing and operating the project facilities would meet all applicable regulatory requirements (see Chapter 4). Gasification ash would be used beneficially to the extent possible and would be landfilled only if no beneficial use were found. Anhydrous ammonia and H_2SO_4 byproducts would be recovered and marketed.

Longer term, the proposed action would support the DOE objective of demonstrating and promoting innovative coal power technologies that can provide the United States with clean, reliable, and affordable energy using abundant domestic sources of coal. The long-term benefit of the proposed project would be to demonstrate advanced power generation systems using IGCC technology at a sufficiently large scale to allow industries and utilities to assess the project's potential for commercial application. The proposed project would minimize SO_2, NO_x, mercury, CO_2, and PM emissions. The project would be expected to remove more than 99 percent of the SO_2 produced in the gasification process using lignite containing an average of 1-percent sulfur. The removal of nearly all of the fuel-bound nitrogen from the syngas prior to combustion in the CTs would result in appreciably lower NO_x emissions compared to conventional coal-fired power plants. More than 92 percent of the mercury in the lignite fuel would be removed in the gasification process. More than 99.9 percent of particulate emissions would be captured using rigid, barrier-type filter elements. The IGCC power plant would be designed to remove approximately 67 percent of the carbon in the feedstock lignite from the syngas.

The successful demonstration of low-emissions electricity production from lignite, an abundant worldwide energy source, could foster similar power plants. These technological advancements would further the goal of reducing anthropogenic emissions of CO_2. Were the project to be successful, the use or consumption of land, materials, water, energy, and labor to construct and operate the project would have long-term positive impacts, both in the United States and abroad, on reducing CO_2 emissions per unit of electricity generated.

The ability to show prospective domestic and overseas customers an operating facility rather than a conceptual or engineering prototype would provide a persuasive inducement to purchase advanced coal utilization technology. The design size for the proposed project was selected to convince potential customers that the IGCC technology, once demonstrated at this scale, could be commercialized without further scale-up to verify operational or economic performance. Successful demonstration would enhance prospects of exporting the technology to other nations and might provide the United States a very important advantage in the global competition for new markets.

The proposed action would also support Mississippi Power's objectives to provide a source of electric power for the state of Mississippi and the national electric grid, as well as provide revitalization for an economically depressed part of Mississippi.

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