

# **CLEAN COAL TECHNOLOGIES**

## **JUNE 1986**

### **PURPOSE**

The purpose of the report is to evaluate the status and potential of technology options for the clean utilization of coal, as well as the impact of government policies and other factors on the demonstration and commercialization of these technologies. The timeliness and usefulness of this report are emphasized in the context of the action of the Congress in starting the Clean Coal Technology Program during the same year that this report was delivered to the Secretary of Energy. Since coal is the most abundant domestic energy resource, it is obvious that efficient and widespread use of coal has direct implications on major areas of national well-being employment, environmental protection, exports (of coal and coal-using technologies as well as goods and services affected by energy costs), and related economic factors such as the ultimate cost of living, the national debt, and the international balance of trade.

### **FINDINGS**

A comprehensive review by a group of informed leaders in the energy field showed that a significant number of then current and newly developing technologies provides coal with the potential to play an increasingly important role in meeting the nation's energy needs while, at the same time, addressing the legitimate environmental issues. The review included pre-combustion options (such as coal cleaning), combustion/conversion options (such as fluidized-bed combustion or coal gasification), post-combustion options (such as flue gas desulfurization), and various combinations. They were evaluated in relation to a range of end-use applications and environmental control criteria. Some of the key findings are abstracted as follows.

- No single technology addresses all needs in a cost-effective manner.
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- The optimum technology for a given application depends on a number of factors such as type of coal, local emission requirements, new or retrofit construction, and scale.
- Specific technologies judged to have the highest potential for commercialization in specific applications were identified.
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- Timing and scope of new regulatory requirements were noted as critical elements which could adversely affect the outlook for promising new technologies.

### **CONCLUSIONS**

Some of the key conclusions of the report are abstracted as follows:

- Demonstration of the most promising technologies in each category of use is needed in order to ensure that the most cost-effective clean coal technologies are available for site-specific applications and for a range of environmental requirements.
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- Before enactment of new emission standards, new clean coal technologies need to be developed and demonstrated to the extent required for market acceptance.
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- Current economic conditions discourage investment by the private sector in developing new technologies, but the difficulty may be overcome by a program which involves both cost-sharing and risk-sharing between government and industry.

## RECOMMENDATIONS

- An effective coordination mechanism should be established between Federal and state programs for technology development that will ensure that funding is applied to programs in as broad, but effective, a manner as possible with commitments to multiyear programs. The Department of Energy should take a leadership role in this coordinated effort.
- Individual states should take actions, as needed, to generate a portion of the funding required for clean coal demonstrations, and to enable the electric utilities to absorb new technology demonstration costs into the rate base for cost recovery.
- The Secretary of Energy should convene a meeting of governors from major coal-producing and coal-using states, along with heads of affected Federal agencies, to develop the coordination mechanism noted above, and to create a panel of industry executives to provide business and technical judgment, guidance, and direction for the Department of Energy's Fossil Energy Program.
- Each of several technologies identified as most-promising should be the subject of effective demonstration programs, consisting of appropriately sized projects to ensure acceptance in its area of application.
- More stringent emission standards should not be applied without regard for the development and demonstration of appropriate clean coal technologies to allow for cost-effective compliance.