Implications of Increased Coal Utilization in the Twenty-First Century: Which Way to the Future?

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Those who are concerned about the growth of the world's population are encouraged by the recent reduction in the rate of that growth from an historic high of 2.2 percent in 1963 to 1.4 percent in 1996. At the current, lower, rate of growth there will be more than 11 billion people on Earth in 2050; approximately double the current population. Most of that increase will be in the developing countries and it will be accompanied by increased urbanization. Providing the increased population with the most basic quality-of-life factors will require significant increases in world energy consumption.

Nuclear fuels and renewable resources are proposed as alternatives to fossil fuels for the production of primary energy. Nuclear power plants currently are politically acceptable in only a few countries and the existing technologies for development of renewable resources for the generation of electricity are woefully inadequate with respect to the huge and growing demand for electricity in the world. Fossil fuels, especially coal, will be the major sources of commercial energy for the next several decades and, perhaps, for many decades.

There are environmental concerns that are heightened by the predictions of increased fossil fuel consumption. Some of these, such as atmospheric sulphur dioxide and airborne particulate matter, tend to increase as a country initially develops economically and then decrease as the economic development continues. Other environmental issues such as the amount of land required for waste disposal and the amount of carbon dioxide produced by a developing country have, historically, increased steadily with economic development. Fortunately, there are also many environmental benefits that are achieved during development. Those with immediate impact on human health, such as access to clean water, are achieved early in a nation's development. The means by which the world will simultaneously solve the dilemmas posed by population, demand for energy, and concern for the environment will define the character of humankind in the next century.