Fossil Fuel Production Up Despite Recession

James Russell

World production of fossil fuels—oil, coal, and natural gas—increased 2.9 percent in 2008 to reach 27.4 million tons of oil equivalent (Mtoe) per day.[1] (See Figure 1.) In the first half of the year, producers strained to meet global demand, but when the recession took hold later in the year the market was swamped by excess supply. Energy prices reflected this shift: oil peaked at $144 per barrel in July, then fell to $34 per barrel in December.[2] Continuing a decade-long trend, most of the growth was in the Asia-Pacific region, where production grew 6.3 percent.[3] (See Figure 2.)

Figure 1. Fossil Fuel Production, 1981–2008

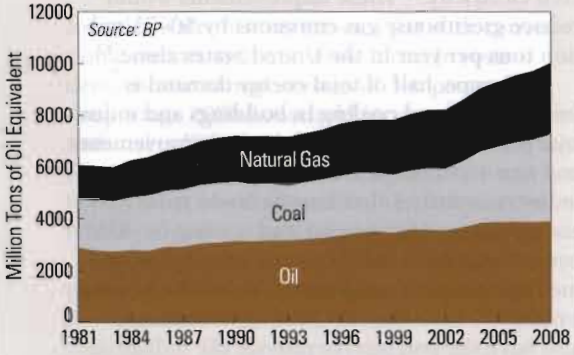
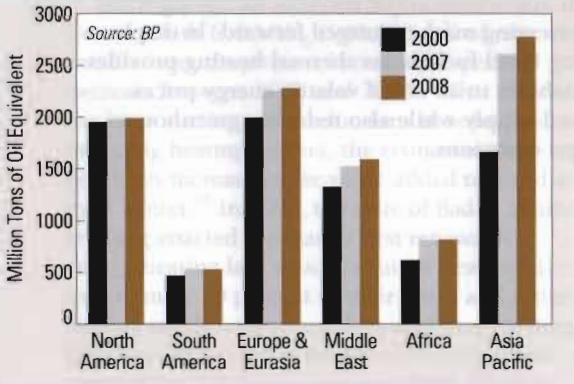


Figure 2. Fossil Fuel Production by Region, 2000, 2007, and 2008



Although the global economic crisis has caused a temporary slump in demand, the longterm trend is clear: fossil fuel consumption in developing countries has surpassed that in industrialized countries. With four times the population and a vast demand for economic development to raise standards of living, developing countries will see energy use rise further.[4]

For six years running, coal has led the growth in fossil fuel production. In 2000, it provided just 28 percent of the world's fossil fuel energy production, compared with 45 percent for oil. But by 2008, coal production reached 9.1 Mtoe per day, representing a third of fossil energy production and a 0.7 percent increase over 2007.[5] The growth in China's coal consumption since 2000 dwarfs that of all other countries combined. India, second in growth, added less than an eighth as much coal consumption as China during that period.[6] (See Figure 3.)

Globally, the largest share of coal production is for electricity generation.[7] Larger capacities and better materials have led to higher efficiencies at coal-fired power plants, particularly in China. China aims to reduce the energy intensity of its economy by 20 percent during the 2006–10 planning period, in part by improving power-plant efficiency by 4 percent.[8] Industry data suggest that this goal was already surpassed in 2007.[9] In the United States, the construction of new coal-fired power plants has been discouraged by expectations of greenhouse gas regulations, as well as factors such as materials costs

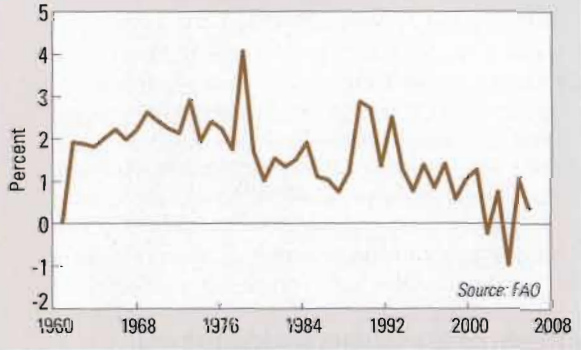
Irrigated Area Expands Slowly

Gary Gardner

The global area equipped for irrigation expanded by 0.3 percent to 280 million hectares between 2004 and 2005, the last year for which global data are available.[1] (See Figure 1.) The advance is one of the slowest in the past decade and is consistent with the generally sluggish pace of irrigation growth since the late 1970s.[2] (See Figure 2.) The slowdown occurs in the context of a world of steadily growing demand for food and limited opportunities for farmland expansion.

Figure 1. World Area Equipped for Irrigation, 1961–2005

Figure 2. Annual Growth in World Area Equipped for Irrigation, 1961–2005



Irrigated area accounts for about 20 percent of cultivated land, but it provides roughly 40 percent of the world's food.[3] Irrigation allows farmers to apply water when crops need it and in the quantities required, leading to yields two to four times greater than in rainfed farming.[4] Along with fertilizer and improved crop varieties, the expansion of irrigation is responsible for the dramatic increase in global agricultural output since the 1960s.[5]

Yet irrigation growth has slowed perceptibly in the past few decades as investment in surface irrigation infrastructure (dams, canals, and the like) has declined. This has happened for a variety of reasons: the choicest irrigation areas have been developed and remaining options are expensive; the generally declining price of food over the past 40 years has lowered irrigation's return on investment; and the social and environmental liabilities of some projects (residents displaced by dam building, for example, and river flows diminished to a point harmful to fish or other wildlife) have made projects politically unfeasible.[6]

Irrigation is overwhelmingly concentrated in Asia, which accounted for 70 percent of global capacity in 2005.[7] (See Table 1.) All other major regions claim only single-digit shares of irrigated area worldwide. The diverse physical and cultural characteristics of different regions has led to a variety of irrigation systems. In dry areas such as the Middle East, northern China, the Indo-Gangetic Plain, and Mexico, irrigation systems are often large, government-run operations. Paddy rice irrigation, as in Southeast Asia, East and South India, and Sri Lanka, is also managed publicly. The highland areas of the Andes in South America, the Atlas mountains in