November 2003

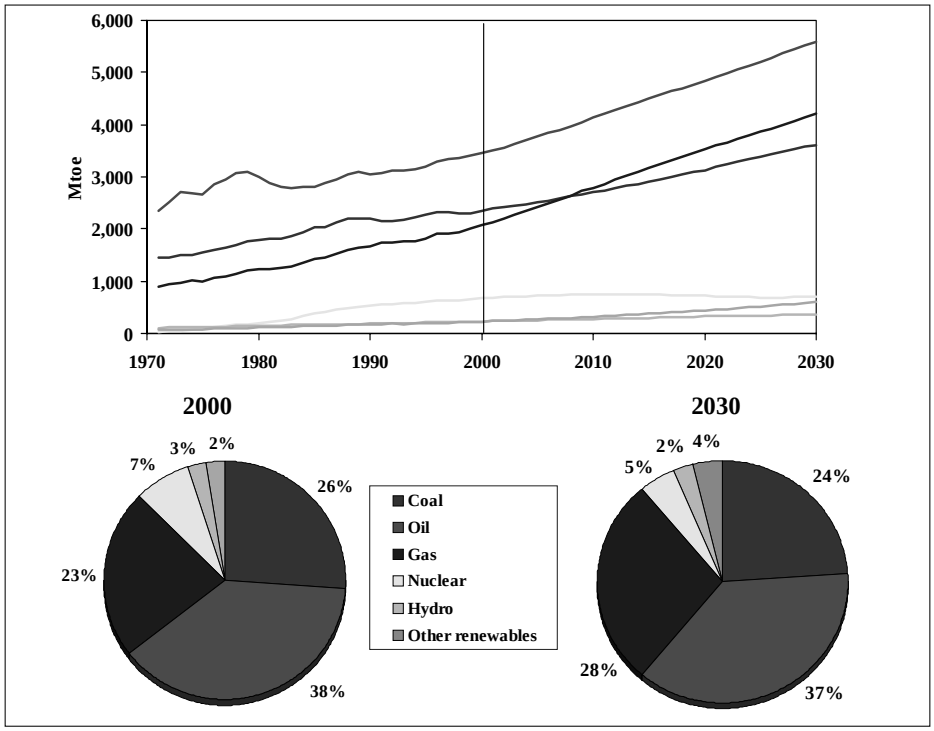
COAL INDUSTRY ADVISORY BOARD
Meeting with IEA Governing Board, Wednesday 10 December 2003
Background Paper

World Coal Demand and Supply Prospects

Primary Coal Demand

Global primary energy demand in the Reference Scenario of the IEA World Energy Outlook is projected to increase by 1.7% per year from 2000 to 2030, reaching 15.3 billion tonnes of oil equivalent (Table 2.1). The increase in demand will amount to almost 6.1 billion toe, or two thirds of current demand. The projected growth is, nevertheless, slower than over the past three decades, when demand grew by 2.1% per year.

Figure 1: **World Primary Energy Demand**



Fossil fuels will account for just over 90% of the projected increase in world primary demand to 2030 (Figure 2.1). Their *share* in total demand actually increases slightly, from 88% in 2000 to 89% in 2030.

The world's energy resources are adequate to meet the projected growth in energy demand. Global oil supplies will be ample at least until 2030, although additional probable and possible reserves will need to be "proved up" in order to meet rising demand. Unconventional oil will probably carve out a larger share of global oil supplies. Reserves of natural gas and coal are particularly abundant, while there is no

lack of uranium for nuclear power production through 2030. Renewable energy sources are also plentiful.

Demand for coal is projected to rise by 1.4% per year, but coal's share in world primary demand will still fall a little, from 26% in 2000 to 24% in 2030. China and India together account for almost three-quarters of the increase in coal demand in developing countries and two-thirds of the increase in world coal demand. Most of the increase in coal consumption will be in power generation. In OECD countries, an increase in power-sector demand for coal will offset a smaller decline in coal use in end-use sectors. The industrial, residential and commercial sectors in the transition economies and in developing countries will burn more coal, but power generation accounts for the bulk of the increase in overall coal demand in both groups.

In all regions, coal use becomes increasingly concentrated in power generation, which accounts for almost 90% of the increase in demand between 2000 and 2030. Coal demand in the power sector will be lifted by the assumed fall in the price of coal relative to that of gas and the gradual development and deployment of advanced coal technologies over the long term. But the anticipation of tougher environmental regulations and new measures to combat climate change may discourage investment in coal-fired capacity in industrialised countries. Industrial coal consumption will increase by 1.2% per year in developing countries and by 1.3% in transition economies from 2000 to 2030. These gains will be underpinned by heavy manufacturing, especially iron and steel. Industrial coal demand will decline in the OECD, by 0.4% per year. Consumption in the residential and service sectors will fall, most sharply in OECD countries.

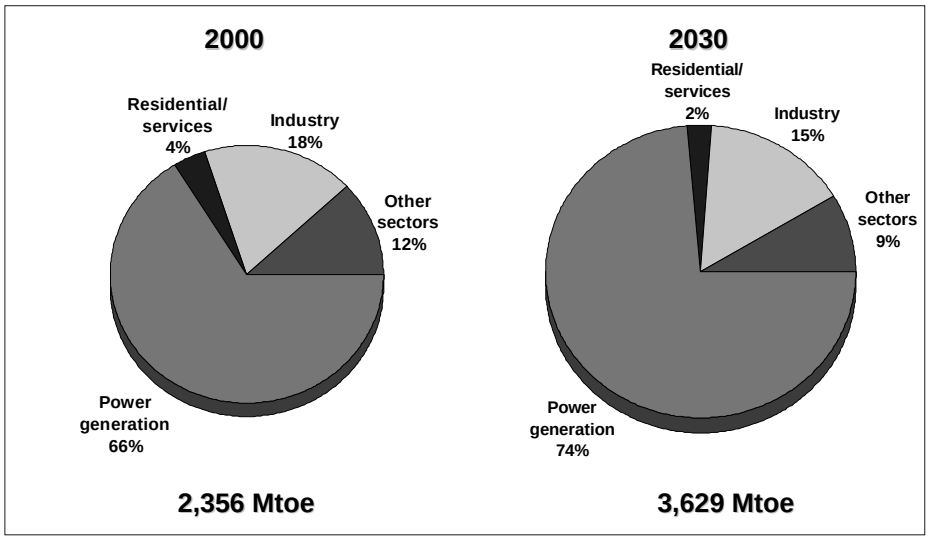


Figure 2: **World Primary Coal Demand by Sector**

Coal demand is expected to be strongest in the developing world and the transition economies, where local supply is ample and production costs are low. The lack of indigenous gas resources will bolster coal use in several countries, particularly India

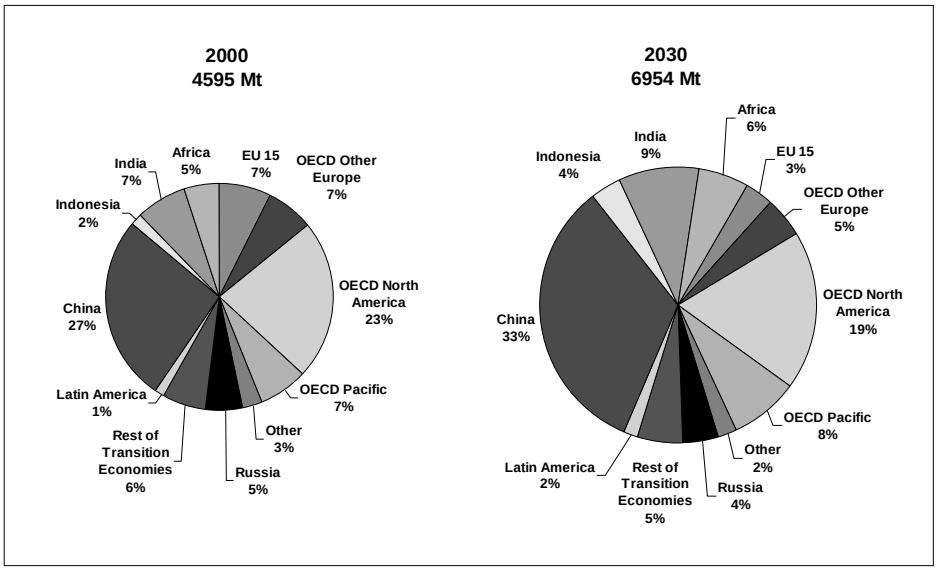
and China. These two countries alone account for close to two-thirds of the increase in world coal use over the period 2000 to 2030. Coal demand will increase slowly in OECD North America and Pacific, but will fall in OECD Europe as gas elbows coal out of all end-use sectors and, to a slightly lesser extent, power generation.

Coal Supply

World reserves of coal are enormous. Compared with oil and natural gas, they are widely dispersed. Economically recoverable coal reserves are estimated at close to one trillion tonnes, representing about 200 years of production at current rates. Almost half the world's reserves are located in OECD countries. In practice, the quality and geological characteristics of coal deposits are more important to the economics of production than the actual size of a country's reserves. Quality varies from one region to another. Australia, Canada and the United States all have high-quality coking coal. Australia, China, Colombia, India, Indonesia, Russia, South Africa and the United States have very large reserves of steam coal.

Global annual coal production is projected to grow by around 51% between 2000 and 2030 or by 2,359 Mt, reaching 6,954 Mt. This growth is roughly equivalent to today's combined production by China, Canada and the United States. The growth in coal production in China is expected to account for 1,072 Mt, or 45%, of this increase, while India, Australia, the United States and Canada, Indonesia and Africa will together account for virtually all the rest, at 1,161 Mt. The EU15 is the only region to experience a significant decline in production, by 106 Mt between 2000 and 2030.

Figure 3: **World Coal Production by Region**



China's 87% increase in production from 2000 levels means its share of world coal production will increase between 2000 and 2030 from 27% to 33%. OECD Pacific, India, Indonesia and Africa also see their shares of world production grow over the *Outlook* period. The most dramatic increase will be in Indonesia, albeit from a low base, where it will more than double to 4% in 2030.

The continued deregulation of electricity markets and the removal of subsidies, import barriers and other market distortions will continue to drive a shift in coal production to the lowest-cost production regions. The international trade in coal is projected to grow at around 1.7% per annum, from around 406 Mtoe (637 Mt) in 2000 to 672 Mtoe (1,051 Mt) in 2030, somewhat faster than demand at 1.4% per annum. South Africa's geographic location enables it to supply Europe, Asia and the Americas. Its role in transmitting price signals between regional markets will remain an important component of international coal trade.

East Asia and Korea will drive the projected growth in import demand, together accounting for around 60% of the growth in coal trade. OECD Pacific will be the only region to experience a significant (12 Mt) decline in imports, as a result of the decline in Japanese imports. The increase in Asian import demand will primarily benefit exporters in Asia-Pacific, particularly Australia, Indonesia and China.