

## **World Coal Situation and Brown Coal**

### **1. Supply**

Half of the world's coal reserves consist of low-rank coal, such as brown coal and sub-bituminous coal.

### **2. Demand**

The market for high-rank bituminous coal has become tight because of the sharp increase in coal shipments to China.

### **3. Supply and demand situation in Japan**

- 1) Japan is nearly 100% dependent on imported coal.
- 2) Japan is the world's largest importer of coal.
- 3) Australian coal comprises a high 60% of Japan's total coal imports.
- 4) Most of the coal that Japan imports is bituminous coal.

### **4. Indonesia's Position**

- 1) As a coal-exporting country in Asia and supplier to Japan, Indonesia has rapidly grown to become the second-largest producer after Australia.
- 2) Although bituminous coal is limited, Indonesia has six times more low-rank coal.

### **5. Coal Supplied to Japan**

Japan consumes about 90 million tons of coal for power generation. Including the amount used for steelmaking, Japan uses a total of approximately 180 million tons of coal a year. Nearly the entire amount is imported, with about 58% coming from Australia, 17% from Indonesia, and 12% from China.

High-heat value bituminous coal is predominately used, from the standpoint of power generation efficiency, cost, and logistics, including shipping and storage. In recent years, China's imports of raw materials for steelmaking have increased sharply. This trend has tightened the market for bituminous coal for power generation. On the other hand, low-rank coal is available, but Japanese users have found it difficult to use.

The UBC Process enables low-rank coal to be upgraded to the same heat value as bituminous coal for power generation. At the same time, it solves the problem of shipping and storage limitations, making possible the utilization of upgraded coal as a substitute for high-rank coal. In addition, the UBC Process aims to produce upgraded Indonesian coal at approximately the same cost as Australian bituminous coal, used for power generation, on a CIF Japan basis.

Diversifying the sources of coal is anticipated to contribute to the stable supply of energy resources.

## **6. Effective Utilization of Low-rank coal**

Following Australia and China, Indonesia is the third country in the Asia-Pacific region to achieve high growth. However, out of Indonesia's total coal resources, bituminous coal, much of which is exported, comprises only 14% of the coal reserves. Brown coal comprises 59% and sub-bituminous coal 27%. Consequently, the commercialization of brown coal upgrading technology would contribute significantly to Indonesia's coal industry.

In addition, Indonesia became a net importer of oil in 2004, and demand for electricity is anticipated to increase considerably in the future. Under a long-term plan formulated by Indonesia's Ministry of Energy and Mineral Resources, upgraded coal production is forecast to rise to 25.5 million tons per year (90,000 tons per day) by 2020. Expectations are high that the utilization of low-rank coal will contribute to addressing Indonesia's energy problems.

## **7. Reducing the environmental burden for coal users**

Indonesia's low-rank coal is noted for its low-sulfur and low-ash content. If high-heat value upgraded coal that is low in sulfur and ash can be utilized, it is hoped that coal users would benefit from a lower environmental burden.