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

Coal and Sustainable Development

- Coal will play an important role in energy systems that support sustainable development for the foreseeable future. This is because of coal's unique combination of advantages: it is affordable, it is safe to transport and store and it is available from a wide range of sources. Coal therefore remains essential in achieving a diverse, balanced and secure energy mix. It can also meet the growing energy needs of many developing countries.
- While improved coal technologies have provided very substantial efficiency and emission improvements to date, accelerated technological effort is required to reduce greenhouse gas emissions and to improve coal's environmental performance. Deployment of cleaner and higher efficiency technologies will be important in both developed and developing countries.
- Further technical solutions include improved combustion efficiency and reduced emissions, coal gasification, new approaches to carbon capture and storage, and the production of hydrogen from coal, which will play an important part in a hydrogen-based energy future.
- Any response to climate change considerations must provide the basis for sustainable development, by addressing ongoing economic and social requirements as well as the environmental challenge.
- The improvement in coal's performance in terms of sustainable development will require co-operation between governments, individual corporations and across industries to accelerate improvement. Collaboration has begun but much more sustained effort is needed.

Sustainable development has been an important part of public policy debate for the last decade. It has evolved into a widely subscribed ideal for how business and society should interact and function. A widely accepted definition of sustainable development is: *Meeting the needs of the present without compromising the ability of future generations to meet their own needs*.

The multiple objectives ("three pillars") of sustainable development – economic prosperity, environmental sustainability and social well being, make it a concept easy to embrace but challenging to implement in a practical manner. While practical implementation is difficult, it is important to accomplish, given the broad societal and governmental pressure for industry to continue to be responsive.

Energy has a major role to contribute, for society to meet the current and future needs of people. The supply of affordable and reliable energy is essential for economic development and is a significant contributor to the alleviation of poverty, improved health, and better quality of life. The current energy mix, typically based on lowest economic costs, faces many challenges. However it is widely accepted that the short-

term substitution of existing fuels with' clean' or 'renewable' energy sources will not yet meet societal needs for abundant, affordable and reliable energy. Coal has a crucial role in meeting current needs and is a resource bridge to meet future goals through the enhancement of knowledge and technology.

Technological advances have tamed coal's traditional disadvantages: local and regional environmental impacts. The use of state of the art technology can make a contribution to coal meeting stringent environmental standards. However, state of the art technologies are not universally deployed and this remains a high priority for governments, coal users and suppliers. Improvement in environmental performance is technologically feasible and should be a priority of industry and government to enhance coal's contribution to environmental sustainability.

Policies should be put in place to encourage deployment of cleaner coal technologies. These would encourage general improvement in industry sectors, essential to underpin changes in individual companies. Already, many major corporations are changing the way they operate because of perceived benefits in sustainable development. In the coal industry, collaboration between coal producers and users could improve coal's contribution to sustainable development through product stewardship.

The CIAB recognises the paramount importance of sustainable development, but stresses that policies that place an undue emphasis on any one pillar will be ineffective.

The Developing Country Perspective

One third of the world's population of six billion lives in developing countries. Many of these people lack access to modern energy services for economic and social development and some of their present energy system is unsustainable. In *World Energy Outlook 2002* the IEA estimates that at present about 1.6 billion people are without access to electricity.

In the developing world, human dignity demands that poverty alleviation take precedence – providing food, shelter, infrastructure and basic human services to the citizens of the world that live below the subsistence level. In this context, economic growth provides financial resources to expand social services and developing country governments need to also focus on these issues. An essential component of economic growth is energy use. We can expect that as the developing world works to alleviate poverty, energy demand will grow commensurately. The IEA projects that developing countries will increase their share of world energy consumption from 30% in 2000 to about 43% by 2030.

Electricity is one of the most efficient and environmentally responsible means of delivering energy to end consumers. While there are a number of options open to developing countries electrifying their economies, their choice will be heavily influenced by cost and complexity. All fuel sources have their limitations. Coal requires gas scrubbing equipment to control emissions of SO_x, NO_x and particulates, and along with all other fossil fuels, contributes to increases in concentrations of CO_2 in the atmosphere. The reliance on agriculture in most developing countries presents barriers to the large scale energy crop plantations that would be necessary to fuel biomass energy systems. Nuclear power may be constrained by technical capacity.

Natural gas is often a scarce resource in developing countries and even where it is abundant it demands large infrastructure investments to make it accessible. Renewable resources like wind and solar power rely on the unpredictable availability of wind and solar energy and the present state of energy storage technologies remains inadequate for efficient, long-term and large-scale storage of electric power. Clearly a combination of all fuel types that uses the available resources to the region will be needed in the future.

Coal stands out as an affordable resource that is relatively straightforward to convert to electrical power. It is also abundant and reliable and will inevitably form a significant part of the future energy mix in many countries.

Clearly, measures to increase energy supplies in developing countries without adequate management of the local, regional and global environmental impacts of the new energy sources would be unsustainable. Therefore transfer of clean coal technologies to developing countries is of particular importance. This presents a clear challenge to the coal and related industries in giving practical effect to the notion of sustainable development by helping to facilitate the transfer of environmentally friendly coal technologies to developing economies.

A high percentage of the population in the developing world is not on the electricity grid. While it is the long-term objective of Governments to ensure access of commercial energy to all, an incremental approach is often necessary for practical considerations. For example, in countries where coal is used for household heating and cooking purposes, transfer of clean-coal stove technology would help alleviate the significant health and environmental impacts of current practices. This incremental approach recognises that household coal use will not be eradicated immediately and improves the sustainability of the practice until electrification is possible.

At a practical level, the modalities and possibilities for technology transfer from developed to developing countries require urgent consideration. The Clean Development Mechanism provided for in the Kyoto Protocol is intended to assist developed countries to reduce their emissions in partnership with developing countries. This is one of the mechanisms that can assist the rapid transfer and deployment of clean coal technologies in developing economies. Partnerships should be considered to facilitate and accelerate the kind of technology cooperation between nations, to ensure the more sustainable use of coal Due to the nature of its business, the coal industry can play a long term role in rising to this challenge and proving leadership in implementing the principles of sustainable development. An area of key consideration in meeting this challenge is the identification of key partnerships and strategic alliances, which can assist with the progress in key focus areas

Responding to Climate Change

Concerns about climate change add a most complex challenge to the long-term use of coal in a sustainable development context. In disregarding the great underlying uncertainties of future climate, emissions, and the efficacy of response options, climate change is commonly presented simply as an environmental issue requiring urgent intervention. This approach overlooks two equally important aspects: its long-term nature and the economic and social challenges of any response.

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Meeting any greenhouse gas stabilisation target will require unprecedented change in the very foundation of the world's economy and there is a great responsibility of establishing a robust response that will itself provide the basis for sustainable development. A successful response will involve the following essential components:

- A continuing robust and vital world economy.
- Accelerated evolutionary improvement in current energy systems.
- Revolutionary technological innovation in energy sources, energy efficiency and carbon sequestration.
- Uninhibited diffusion of greenhouse-friendly technologies to ensure they are rapidly deployed where most advantage will accrue.
- Improvement in the circumstances of the world's poor.

Recent CIAB publications on Coal and Sustainable Development:

- Coal and Sustainable Development: Attitudes and Activity, November 2003
- Clean Coal Technologies Roadmaps; a CIAB Annex to the IEA Clean Coal Centre's CCT Roadmaps Report (awaiting publication)
- Coal and Sustainable Development – Achieving Balance in Priorities; a CIAB position paper prepared for the World Summit on Sustainable Development in Johannesburg, August 2002