

“Conference on Clean Coal Technology”

India's GDP is slated to grow at well above 7% Compound Annual Growth Rate (CAGR) for next 20 to 30 years. Energy is one of the key drivers of growth and hence to ensure energy availability at reasonable price is more of a prerequisite to keep the economic engine well oiled. Due to abundant domestic availability, coal is a predominant energy source for India. In foreseeable future, it is impossible to overlook coal's role in India's energy basket.

In 21st century, however, there is an additional issue of Global Warming which needs to be seriously addressed. Carbon dioxide is emitted as a result of burning of fossil fuels (petroleum liquids, natural gas and coal) which have been found to be the major culprit for climate change. Coal emits almost 50% more CO₂ per unit of energy released when compared with liquid petroleum products and twice the amount when compared with Natural Gas. If we-the human race- ignore these early warning signals blindfolded by greed we will leave a devastated legacy for our great grand children. Let us understand this loud and clear that there is no time to argue, debate, haggle or fight as to who is more responsible and who should take corrective action-if it is possible at all-, since charity begins at home. **Let us understand it unequivocally that fury of climate will not differentiate between the sinners and the innocent.**

Notwithstanding anything said above, Coal's role as a dominant fuel in the energy basket of the world and India too cannot be wished away without the hazard of upsetting the economic machinery of the world. Hence there is a dire need to meet with the paradoxical compulsions of using coal and use it cleanly to control emissions. On one hand we need to maximize use of domestic Coal and on the other hand to put a stop to environmental degradation,

CO₂ emission needs to be checked while utilising coal. **Clean Coal Technology is aimed at resolving this paradoxical situation in an acceptable manner.**

Coal is normally used as a solid fuel for power generation and heating/reduction applications in industry. Technological developments can now allow use of coal as gas-popularly known as syngas- as a fuel with efficiency advantage and also as a raw material for chemical (CTL) and fertilizer manufacture. This is achieved by gasification of coal.

The Clean Coal Technology ensures to both Energy Security for the country by enhancing fuel utilisation efficiency while minimizing carbon dioxide and other emissions to the environment. The present conference considered following aspects of Clean Coal Technology:

- Integrated Gasification and Combined Cycle (IGCC) route for Power generation. While IGCC presents many advantages the key advantages are of fuel efficiency increase and reduced carbon dioxide emission.
- Coal gasification makes the use of coal environmentally friendly and opens a new vista for chemical conversion to petroleum liquids, chemicals and fertilizers.
- Coal gasification facilitates pre-combustion capture of CO₂ in far more controlled environment as compared to conventional power plants. The captured CO₂ can be stored underground and sometimes used gainfully too for activities like Enhanced Oil/Gas Recovery.
- Present coal based plants can also be retrofitted with IGCC Technology at a significantly lower cost as compared to a grassroots plant since lot of existing hardware can be used gainfully in the new scheme.

Following steps are needed to introduce advanced Clean Coal Technology at State and National level:

- ◆ Feasibility study to retrofit one of the old thermal power plants with IGCC technology. Once proven in one location, the same can be replicated.
- ◆ For investment decisions on new coal based power plants it may be made mandatory to check the economic competitiveness of IGCC technology with Ultra Supercritical (USCPP) or such other options. While evaluating technologies the need to minimize CO₂ emissions in terms of MT/MWHR, ease of CO₂ containment and the concomitant financial benefit arising out of Carbon credits must be taken into account.
- ◆ Identify uses of captured CO₂ like Enhanced Oil/Gas Recovery, CBM Production
- ◆ Identification of potential carbon dioxide storage sites and possible capacity
- ◆ Identify possible pipeline network to carry carbon dioxide from present emitting sites to utilization/storage options.