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Coal Bed Methane Recovery and Utilisation

Project Title

Coal Bed Methane Recovery & Commercial Utilisation

Budget

Total: USD15 million
Global Environment Facility: USD9 million;
United Nations Development Programme:
USD1.2 million; and Government of India:
USD4.5 million

Duration

September 1999 to December 2008

Partners

Ministry of Coal, Government of India;
Central Mine Planning & Design Institute
Limited, Ranchi; Bharat Coking Coal Limited,
Dhanbad; Central Institute for Mining and
Fuel Research, Dhanbad; and United Nations
Industrial Development Organization

Project Location

Moonidih and Sudamdih Mines, Dhanbad

Challenges

Coal mining is estimated to account for about 10 percent of all human-induced emission of methane, a greenhouse gas which is considered to be 21 times more harmful than carbon dioxide. Methane is absorbed in coal seams and the surrounding strata and released during coal mining. Small amounts of methane are also released during the processing, transportation and storage of coal. Methane can cause explosions in underground mines when it is trapped in coal beds and then suddenly released during mining. Recovery of methane not only reduces the amount of methane that escapes into the atmosphere but also reduces the danger of mining-related hazards. When recovered from these coal beds, however, methane can be used as a source of energy and fuel as it is a remarkably clean fuel.

Response

For the first time in India, coal bed methane (CBM) is being recovered and utilised through an innovative project supported by the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP) and implemented by the Ministry of Coal, Government of India. The project has demonstrated the commercial feasibility of capturing methane from coal bed and utilising it as transport fuel and for electricity generation. This recovery of hazardous methane prior to coal mining also ensures greater safety for miners.

Impact

Under this project, methane was extracted from two wells in the famous coal mines of Dhanbad, in the eastern Indian state of Jharkhand, and power generated at a competitive price of Rs.4.50 per

kilowatt hour (kWh). The recovered gas from the two coal mines was about 11.52 million cubic metre or 7,626 tonnes of gas per year. This was equivalent to 160,151 tonnes of carbon dioxide, another greenhouse gas. Mere utilisation of the captured methane reduced 150,500 tonnes of carbon dioxide-equivalent greenhouse gas emissions annually, assuming that otherwise all this methane would have escaped to the atmosphere due to the mining operations. Thus, annual carbon dioxide reduction, solely from the two demonstration sites, was an estimated 180,000 tonnes.

Besides, the electricity generated is being supplied to 400 households in the nearby mine workers' colony. To ensure replication, the project has been successful in making CBM recovery a subject in the curriculum of the Indian School of Mines in Dhanbad.

The capacity of the Central Institute for Mining and Fuel Research, Dhanbad, a major resource centre for CBM, in recovering methane from working mines has improved substantially under this project.

To disseminate the data generated to private players and to replicate these efforts, a 'Clearing House' has been set up with the assistance of the US Environment Protection Agency at the Central Mine Planning and Design Institute Ltd., in Ranchi, the capital of Jharkhand.

Importantly, the project has influenced the Ministry of Coal to take informed decisions on CBM recovery across the country. The 11th Five-Year Plan of the Indian government refers to this innovation as a potential alternate source of energy and fuel. Prospective investors are keen to replicate CBM recovery from gaseous mines, ensuring nationwide and far-reaching impact of this project.

For more information, please write to info.in@undp.org

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