

**Activities on
Development Of CBM/CMM**

In India

Coal Sub-Committee Meeting, Geneva

12 th Oct 2009

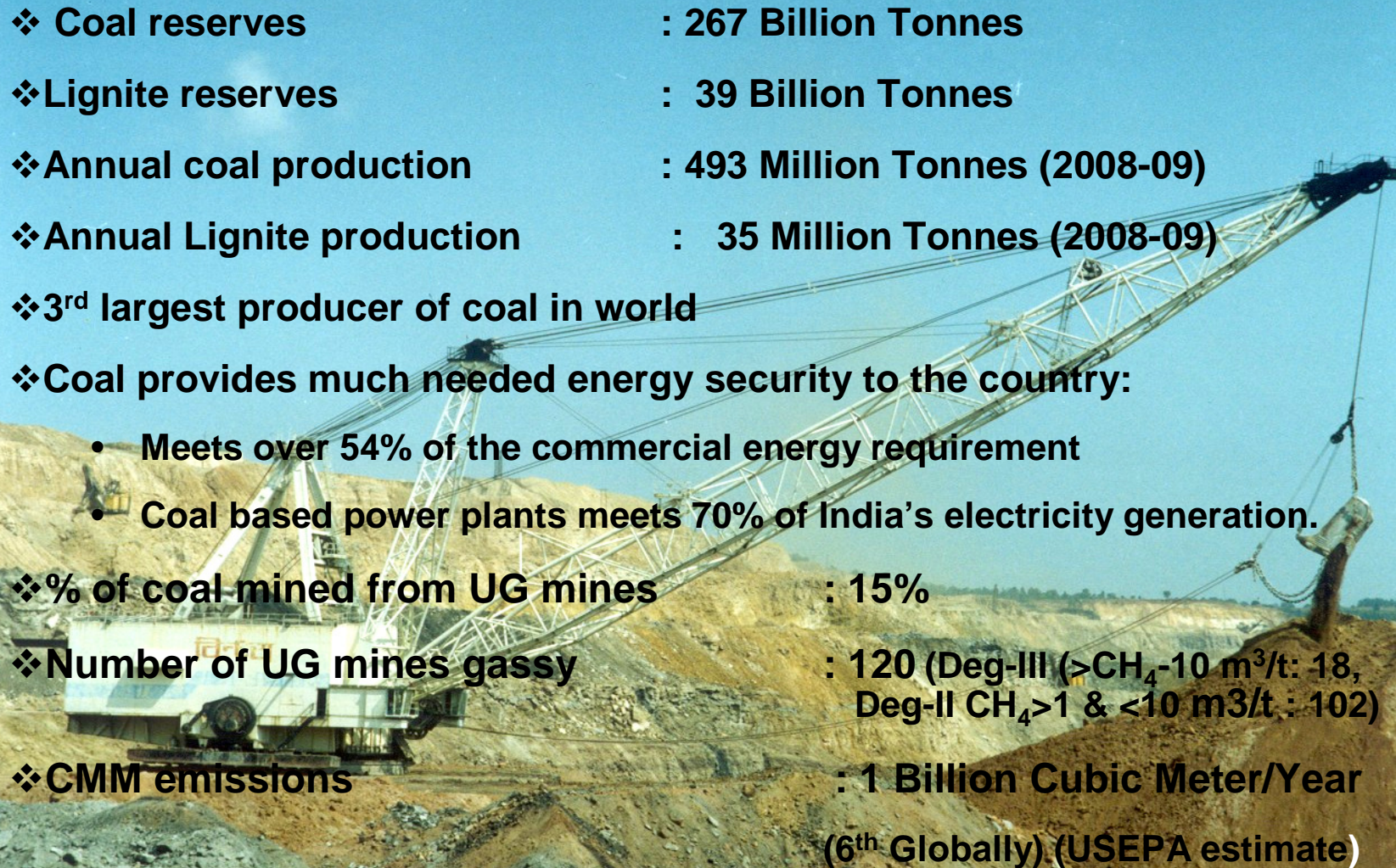
A.K.Singh

**Chairman-Managing Director, CMPDI,India and
Co-Chair, Coal Sub-Committee**

Presentation Outline

- India Coal Sector: An Overview
- Establishment of Coalbed and Coal Mine Methane clearing house in India.
- Development of Virgin Coalbed Methane
- CBM/CMM Recovery Demonstration Project
- Commercial Development of CMM
- Assessment of CMM Potential Related to Opencast Mining Areas
- VAM: A Priority Area for Development
- Challenges and Support Required for Development of CMM and VAM
- Methane to Markets Partnership Expo 2010 At New Delhi

Coal: Epitomizes Energy in India

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- ❖ Coal reserves : 267 Billion Tonnes
 - ❖ Lignite reserves : 39 Billion Tonnes
 - ❖ Annual coal production : 493 Million Tonnes (2008-09)
 - ❖ Annual Lignite production : 35 Million Tonnes (2008-09)
 - ❖ 3rd largest producer of coal in world
 - ❖ Coal provides much needed energy security to the country:
 - Meets over 54% of the commercial energy requirement
 - Coal based power plants meets 70% of India's electricity generation.
 - ❖ % of coal mined from UG mines : 15%
 - ❖ Number of UG mines gassy : 120 (Deg-III ($>CH_4-10 \text{ m}^3/\text{t}$: 18, Deg-II $CH_4>1$ & $<10 \text{ m}^3/\text{t}$: 102)
 - ❖ CMM emissions : 1 Billion Cubic Meter/Year
(6th Globally) (USEPA estimate)

Establishment of India CMM/CBM clearinghouse

- As per decision of GoI, a CMM/CBM related Clearinghouse has been established at CMPDI, Ranchi in Nov'08 under the aegis of MoC and USEPA.
- The kick-off event was inaugurated by Secretary, Coal, GoI and attended by officials of Ministry of Coal, Chairman, CIL, Chief Executives of Coal Industry, CBM players in India and abroad, Consul General, US Consulate, Kolkata and USEPA officials.
- This will help promotion of development of CMM/CBM in country.

Accomplishments:

- An international workshop “Development of CBM/CMM in India: An Opportunity Area” was also held in Nov'08 which was attended by national/international experts in the subject.
- A website of the clearinghouse has been launched: www.cmmclearinghouse.cmpdi.co.in
- A quarterly magazine has been put on website



Opening of India CBM/CMM Clearinghouse

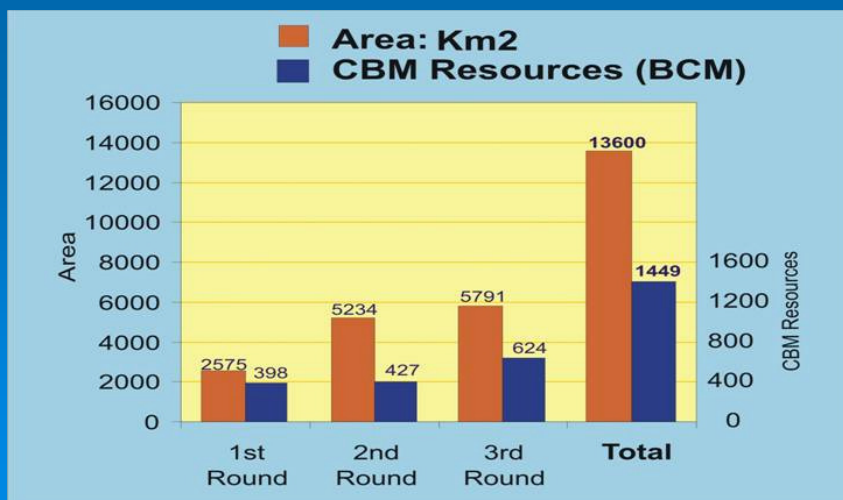


International Workshop on CBM/CMM Opportunities in India

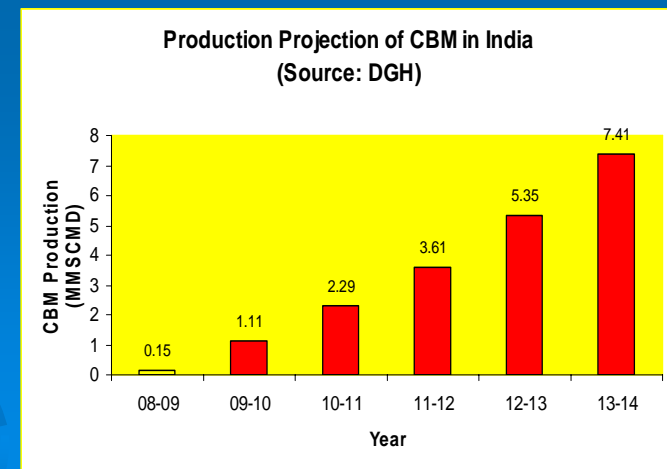
Development of Virgin Coalbed Methane

- ❖ CBM Resource: 3.4 TCM (CMPDI Estimate: 2008)
- ❖ 26 Blocks allotted for Commercial Development
- ❖ Production potential: 38 Million Cubic Meter per day, which can support power generation of 6700 MW.
- ❖ Commercial production of CBM started and was 0.15 million cubic meters per day.
- ❖ Expected to rise to 3.6 million cubic meters per day in 2011-12, showing 24 fold growth in 2 years.
- ❖ 10 more blocks are on offer for allotment

Allotment Details of CBM Blocks



Production Projection of CBM



CBM/CMM Recovery Demonstration Project

UNDP/GEF/Gol funded Demonstration project at Moonidih & Sudamdih mines of BCCL

- ✓ A CBM/CMM Recovery & Utilization Demonstration Project has been successfully implemented at Moonidih.
- ✓ CBM is being recovered from 2 wells for continuously generating 500 Kw electricity which is being supplied to Moonidih Project. So far 0.9 million units of electricity generated.
- ✓ Successful implementation of this project proved efficacy of technology in Indian geo-mining conditions.
- ✓ At Sudamdih, in-seam gas drainage and utilization will be demonstrated by Dec'09.

CMM Demonstration Project



Hydro Frac Unit at Moonidih



S R Pump at Moonidih



Flare of Methane at Moonidih



Gas Based Generator at Moonidih

Commercial Development of CMM

- ✓ Successful implementation of demonstration project has opened opportunities for harnessing CMM in Indian mining conditions.
- ✓ Development of CMM is high on agenda of GoI/CIL
- ✓ This will make future mining safe and will be an additional source of clean energy and revenue.
- ✓ CMPDI is implementing a R&D project for identification of suitable area for CMM development.
- ✓ Under this R & D project, few blocks have been identified. Detail assessment under progress.

Updates on Showcased Projects

✓ Two projects on CMM development opportunity related to projectised opencast areas were showcased at M2M Partnership Expo 2007 held at Beijing, China from 30th Oct to 1st Nov'2007.

- Korba Coalfield
- Moher Sub-Basin, Singrauli Coalfield

✓ Updates

- ✓ Slimhole drilling has been taken up for generation of CBM specific data
- ✓ Data generation to be completed by Nov'2009
- ✓ Assessment report to be ready by May2010.

Development of VAM

- ✓Development of VAM is a priority area.
- ✓CMPDI has recently generated VAM specific data in several Deg-III ($\text{CH}_4 > 10 \text{ m}_3/\text{t}$) mines of ECL, BCCL and CCL.
- ✓Discussions are going with suitable technology providers.
- ✓Detail proposal outlining technology and financial terms are expected soon.
- ✓CMPDI is also pursuing a CMTF project on VAM.
- ✓Detail project is under development

Challenges and Technical Support Required

• *Resource assessment technique and techno-economic evaluation of CMM in Indian Geo-Mining Conditions*

- Resource assessment technique in de-stressed condition
- Techno-economic evaluation of identified project area.
- Utilization of recovered methane
- Capture and Utilisation Technique of low concentration of methane in ventilation air
- Facilitating Study tour of Indian Team to operational CMM/VAM Sites

Since expertise on above are not available, international experts' help from partner countries would be required.

M2M Partnership Expo 2010

- **Coal India Limited has sponsored a Platinum Pavilion in the forthcoming Expo**
 - **Accomplishments/ opportunities in the following will be showcased:**
 - **India CBM/CMM Clearinghouse**
 - **Development of VCBM**
 - **Implementation of Demonstration Project**
 - **Opportunities in CMM/VAM**
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Thank You

