Development of CBM in India: An Overview

Flare of Methane at Moonidih

S R Pump at Moonidih

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Presentation outline

- India’s energy scenario
- Coal: Reliable source for energy security in India
- Coal: A source of clean energy
- Development of CBM: India’s accomplishments
- Development of CBM/CMM: CIL/CMPDI’s initiatives
- Development of CMM: Opportunities and challenges
- VAM: An area for development
India’s Energy Scenario

- India is one of the fastest growing economies
- The GDP growth is over 8%, likely to increase to over 10% in near future
- This GDP growth is required to eradicate poverty and meet country’s human development goal
- To sustain such growth 3/4 fold increase in primary energy requirement envisaged
- Integrated Energy Policy Document indicates total energy requirement of the country will increase from a current level of about 500 MTOe to 2000 MTOe by 2031-32.
- Efforts are on to utilize all possible energy resource-renewable, non-renewable, coal based additional resource etc to meet this gigantic target.
Coal is the main source of energy in India.

At present it meets about 55% of the primary energy requirement of the country.

Studies indicate that this situation is likely to continue in the foreseeable future.

To meet the projected demand of coal (2 BT by 2031-32), efforts are on to:

- Increase the proved resource base
- New coal extraction technologies
Coal: A Source of Clean Energy

- Usage of coal as a source of clean energy is a priority area both at Govt. and CIL level to meet the overall objective of low carbon path.

- For the purpose Clean Coal Technology is being pursued with right earnest and a National Mission has been established for coordinating efforts taken in this field by academic & scientific institutions along with industry:

  - **Pre-combustion processes** – Coal Beneficiation: CIL to increase the existing washing capacity from 39.4 MT to 140.5 MT by 2012 mainly through participation of private players under BOM.

  - **Combustion processes** – Development of sub-critical, Super-critical & Ultra super-critical Pulverized Coal Fired Boilers, IGCC.

  - **Un-conventional energy source** – Priority development of CBM, CMM, AMM, VAM, Gasification (surface & in-situ) of coal etc.
To facilitate development of CBM, Govt. of India formulated CBM Policy in 1997. The highlights are as under:

- Blocks to be awarded through open international competitive bidding system
- No participating interest of the Government
- No upfront payment, No signature bonus
- Exemption from payment of customs duty on imports required for CBM operation
- Freedom to sale gas in the domestic market
- A seven years tax holiday

As a result of liberal fiscal provisions, commercial development of CBM took a fast pace

- 26 such blocks allotted, 8 more blocks under allotment by Govt of India.
- Production started from few allotted blocks
- Production likely to pick-up rapidly.
Development of CBM: India’s Accomplishments

- CBM resource in allotted (26)/ under allotment (8) CBM blocks: 1.8 TCM, Area- 17700 sq km
- Production potential in allotted blocks: 38 Million Cubic Meter per day, which can support power generation of 6700 MW.
- CBM well drilled: 280, Total investment: Rs 256 Crores (USD 57 million)
- Reserve established by different operators in 5 blocks: 8.4 TCF
- 3 blocks (Raniganj South-GEECL, Sohagpur West and Sohagpur East- Reliance Industries Ltd) has entered in development stage

Details of allotment of CBM Blocks for Commercial Development up to 3rd Round
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<th>Status of Allotment/Development of CBM Blocks</th>
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<td>1</td>
<td>Blocks awarded till date</td>
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<td>Status of Blocks as on date under</td>
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<td>ii. Exploration Phase - II</td>
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<td>iii. Development Phase-III</td>
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<td>Area awarded, sq. km.</td>
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<td>Total CBM Resources, BCM</td>
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<td>CBM wells drilled so far (Core Hole/ Test well/ Pilot well)</td>
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<td>CBM reserve established (Gas Initial In Place), TCF/BCM for 4 blocks</td>
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<td>Approved gas sale Price, $/MMBTU</td>
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<td>10</td>
<td>Present Gas Production from 3 blocks: RG(S), SP(E) &amp; SP(W), MMSCMD</td>
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<td>Expected CBM gas production from 3 blocks by 2013, [Raniganj(S), Sohagpur(E), Sohagpur(W)], MMSCMD</td>
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Commercial production of CBM started and during 2008-09 it was 0.15 MMSCMD (million std cubic meter per day).

The CBM production is expected to increase to 3.6 MMSCMD by 2011-12 and to 7.14 by 2014.
Development of CBM/CMM: CIL/CMPDI’s initiatives

- CMPDI is pursuing development of CBM through:
  - Resource assessment: 3.4 TCM (Prognosticated)
  - Generating CBM related data for enlarging resource base
  - Preparation of data dossiers for allotment of CBM blocks
  - Implementation of Projects (Demonstration- CMM & Commercial-CBM)
  - Pursuing development of CMM & VAM

![India’s Hydrocarbon Reserves (MTOe)]
Source: Integrated Energy Policy Document
Implementation of Projects:

- UNDP/GEF/GoI funded Demonstration project at Moonidih & Sudamdih mines of BCCL
- CIL-ONGC commercial projects in Jharia and Raniganj CBM blocks
CBM Recovery and Commercial Utilization - Demonstration Project

- Successfully implemented at Moonidih mine of BCCL.
- 3 CBM wells drilled and 3 potential seams in each well hydro-fractured
- 2 CBM wells are producing gas after dewatering
- Dewatering being taken up in 3rd well after which CBM production will start.
CBM Recovery and Commercial Utilization - Demonstration Project ...

- The produced gas is being utilised for continuous running 500 Kw gas-based generators

- So far over 1.1 million units of electricity generated.

- Generated electricity being supplied to Moonidih Mine Colony.

- Successful implementation of this project proved efficacy of CMM extraction technology in Indian geo-mining conditions.
Commercial Development of Coalbed Methane: CIL/CMPDI’s Endeavour

- Co-implementing commercial CBM Project in Jharia and Raniganj CBM Blocks allotted to CIL-ONGC consortium.
- Production from Jharia CBM Block likely to start by 2010.
- A Development Plan with budgetary estimate of Rs 1290 Crores (USD 290 Million) has been submitted to the Govt. for approval.
Opportunities

- Occurrence of high rank coal in many coalfields
- Substantial coal resource is available in virgin coal seams lying below the worked out seams
- Successful implementation of demonstration project has opened opportunities for harnessing CMM in Indian mining conditions.
- CMPDI is implementing a R&D project for identification of suitable area for CMM development.
- Under this project, few blocks have been identified.
- Expression of Interest floated for identification of suitable service provider.
- Blocks to be awarded for commercial CMM development through bidding.
Development of CMM: Opportunities & Challenges

Challenges

1. Technical

   • Resource assessment technique of CMM in de-stressed condition
   • Techno-economic evaluation of identified project area.
   • Utilization of recovered methane

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

2. Regulatory:

   • Regulatory framework for development of coal mines and CBM are in place
   • Regulatory framework for simultaneous and harmonious exploitation of CBM and coal mining under formulation by Govt. of India.
Development of Ventilation Air Methane (VAM)

- Development of VAM is another priority area.
- CMPDI has recently generated VAM specific data in several D-III mines of CIL.
- An EoI has been floated for identification of suitable collaborator for commercial development of VAM projects.
- Low concentration of methane in the ventilation air is a technological challenge.
India CBM/CMM Clearinghouse

- India CBM/CMM Clearinghouse has been established at CMPDI, Ranchi in Nov’08 under the aegis of MoC and USEPA.
- This will help promotion of development of CMM/CBM in country.
- An international workshop was also held in Nov’08 which was attended by national/international experts in the subject.
- A web-site is functional which highlights the opportunities of CBM/CMM development in India
Thank You