COAL BED METHANE

2nd INDO-US COAL WORKING GROUP MEETING

WASHINGTON

NOVEMBER 2005

COAL BED METHANE

- Coalbed methane(CBM) – a generic term for the methane rich gas originating in coal-seams.
- Now a days in industry CBM is classified in three main categories:

  Coal-mine methane (CMM):

  Abandoned mine methane(AMM)

  Virgin coalbed methane(VCBM):

- Worldwide case histories reveal that generally CMM and AMM are the activity area for mining industries and VCBM is the area of activity for natural gas industries.

Demand and Supply of Natural Gas

Year	Demand (MMSCMD)	Supply(MMSCMD)
2001-02	151	70
2006-07	231	121
2011-12	313	141
2024-25	391	141

CBM-Indian Scenario-CBM Policy Era
Policy Initiative by Govt of India

- In 1997 GOI made MOPNG as the administrative Ministry for CBM and DGH nominated as Nodal agency for promoting CBM in India.
- Govt of India adopted CBM Policy in July 1997, major points are:
  - ✓ No participative interest from GOI
  - ✓ Allotment of Blocks through competitive Global bidding
  - ✓ Exploration & Development under confessional type of agreement through Model Contract
  - ✓ 7 year tax holiday from the date of commencement of commercial production
  - ✓ Nominal commercial bonus of US $ 0.3 million on declaration of commercial assessment
  - ✓ Freedom to sell gas at market driven price in domestic market
  - ✓ Income tax 35% for Indian Company and 48% for foreign Company
  - ✓ Provision of 100% cost recovery
  - ✓ Exemption on Customs duty on imported equipments

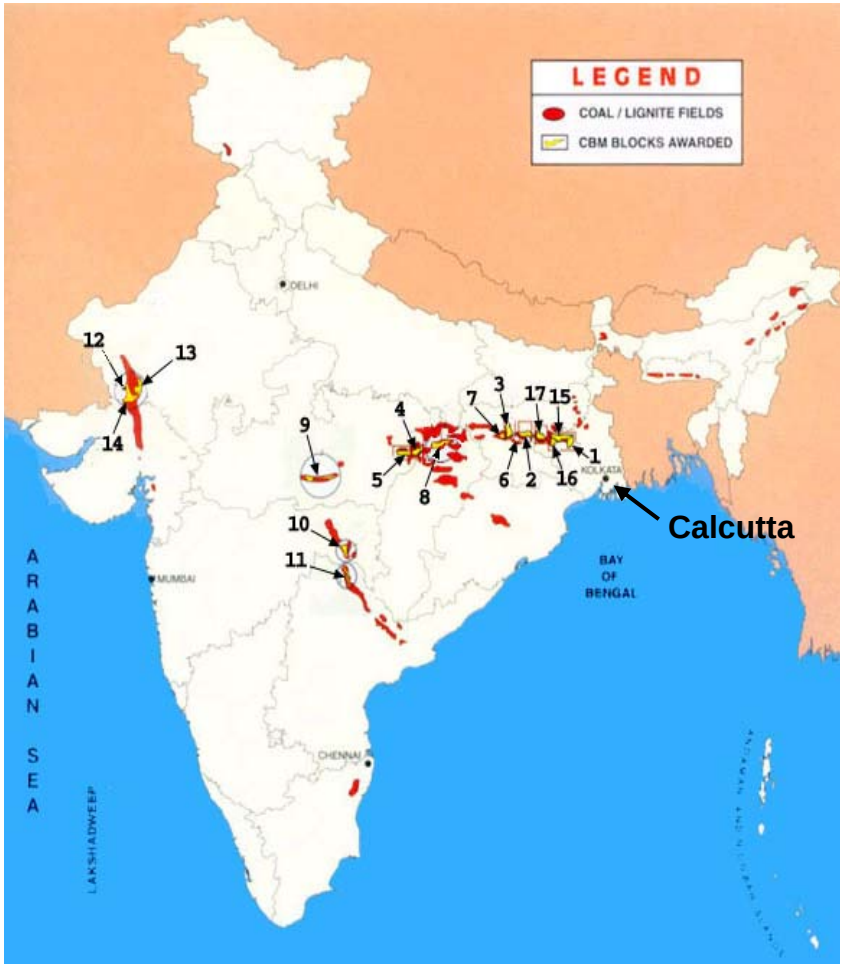
CBM Potential in India

- Total coal resource: 248 billion tons
- Gondwana Basins contribute about 99% of it
- Damodar Valley Coalfields contribute 50% of this resource – primary target for CBM Exploration.
- Estimated CBM resource - 0.8 to 1.5 TCM (different sources).
- ONGC's preliminary assessment indicate 4 Damodar Valley Coalfields viz. Jharia, Bokaro, North Karanpura and Raniganj to be most prospective.
- Most of the Indian coals are falling short of threshold maturation level of 0.8 VRo and it is unlikely that sufficient thermogenic methane generation to saturate the coals at reservoir condition will be present.
- Methane resource through biogenic route known from few foreign basins, with less than threshold maturity, by active hydro-geological play. Such favorable condition, if present in any Indian coal basin, may be prospective.

Block delineation under CBM Policy by CMPDI

- There was a general lack of availability of data for CBM prospect evaluation.
- DGH/MOP&NG addressed the problem by engaging CMPDI, for delineation of prospective CBM blocks and corresponding data package preparation.
- CMPDI has prepared data packages for most of the blocks leading to 2 rounds of bidding by DGH. CMPDI has now taken up jobs related to block delineation and preparation of data package for 3rd round of bidding.
- Routine exploratory & mining data were used for indirect assessment of CBM resource, which has now been validated by direct measurement from already allotted CBM Block.
- 16 CBM blocks have so far been allotted with prognosticated resource of 825 BCM.

CBM BLOCKS OF INDIA



1st Round of Bidding

1	500 sq km	42 bcm	Raniganj	Essar
2	95	45	Bokaro	ONGC-IOC
3	340	62	N. Karanpura	ONGC-IOC
4	495	49	Sohagpur East	RIL
5	500	37	Sohagpur West	RIL
	1930	235		

2nd Round of Bidding

6	70	30	S. Karanpura	ONGC
7	267	43	N. Karanpura	ONGC
8	825	34	Sonhat	RIL
9	714	29	Satpura	ONGC
10	503	20	Wardha	ONGC
11	386	30	Godavari	-
12	1045	95	Barmer	RIL
13	1020	88	Barmer	RIL
14	790	87	Barmer-	ONGC
	5625	456		

Blocks Awarded on Nomination Basis/FIPB

15	350	43	Raniganj	ONGC-CIL
16	210	30	Raniganj	GEECL
17	85	85	Jharia	ONGC-CIL
	645	158		
Gross	8200	849		

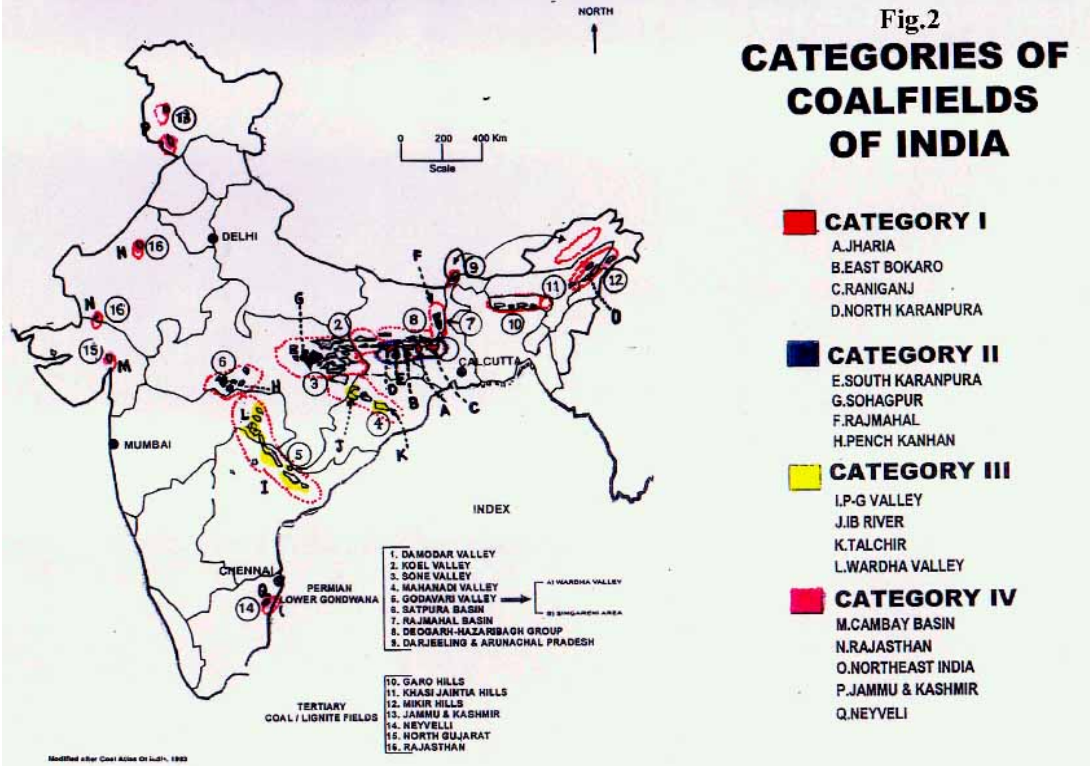


Fig.2

CATEGORIES OF COALFIELDS OF INDIA

CATEGORY I
- A.JHARIA
- B.EAST BOKARO
- C.RANIGANJ
- D.NORTH KARANPURA

CATEGORY II
- E.SOUTH KARANPURA
- G.SOHAGPUR
- F.RAJMAHAL
- H.PENCH KANHAN

CATEGORY III
- I.P-G VALLEY
- J.IB RIVER
- K.TALCHIR
- L.WARDHA VALLEY

CATEGORY IV
- M.CAMBAY BASIN
- N.RAJASTHAN
- O.NORTHEAST INDIA
- P.JAMMU & KASHMIR
- Q.NEYVELI

After Peters et.al 2001

COAL FIELDS OF INDIA AND THEIR CATEGORIZATION

Category I	Gondwana Coals ranking high volatile bituminous A and above.	Jharia, Bokaro, Raniganj and North Karanpura Coalfields.
Category II	Gondwana Coals ranking high volatile bituminous A and below.	South Karanpura, Raniganj, Pench-Kanhan and Sohagpur Coalfields
Category III	Low ranking Gondwana Coals.	Talchir, Ib, Pranhita-Godavari Valley and Wardha Valley Coal field.
Category IV	Tertiary Coal / Lignite resources.	Cambay, Bikaneer-Nagaaur, Barmer, Assam-Arakan, Cauvery and Himalayan Foot Hills Basins.

Close Examination of results of Proximate analysis of four fields reveals they can be subdivided in three categories:

1. **Ash: <15% with >70% Vitrinite**
2. **Ash: 15% -25% with 45%-70% Vitrinite**
3. **Ash: >25% with <45% Vitrinite**

New Blocks to be Offered

S. No	Block	Area (Sq Kms)	BCM
1	Birbhum	248	50
2	Rajmahal	469	168
3	Ramkola Tatapani	450	54
4	Singrauli	331	30
5	Sohagpur	609	17
6	Mand Raigarh	634	119
7	Godavri	750	28

FDI & CARBON CREDIT

- For CBM exploitation 100 % Foreign Direct Investment is allowed
- Carbon Credit is available for Coal Mine Mithane and Abandoned Mine Mithane

Areas of Assistance

- Engagement of Experts for Resource modeling.
- Assistance to develop a model project with well defined functional areas for each of the stake holder i.e. the coal producing company, Methane recovery company, Mine Safety authorities & also to develop a mechanism where the administrative, legal & fiscal regime is well defined for simultaneous coal extraction & methane recovery in the same mining leasehold.
- The Regulatory provisions for different stake holders for coal extraction, Methane extraction & Coal gasification with in the same lease hold.

THANK YOU

Drilling and Completion – Indian Context

Phase Wise Strategy for Indian Gondwana Basins

- **Drilling:**
  - ✓ **Exploration Phase : Conventional Drilling**
  - ✓ **Pilot assessment Phase: Conventional/UBD**
  - ✓ **Development Phase: Full scale UBD based on success of Pilot phase**
- **Casing & Cementation:**
  - ✓ **2 Casing Policy with simple, light weight, low cost well head diverter system (Annular BOP).**
  - ✓ **Preferably light weight cementation- due to large column of cement & low fracture gradient. (Otherwise two stage cementation)**
- **Cavity Completion – a subject of further R & D**
- **Horizontal Multilateral Well – Suitability of this method need to be probed**