



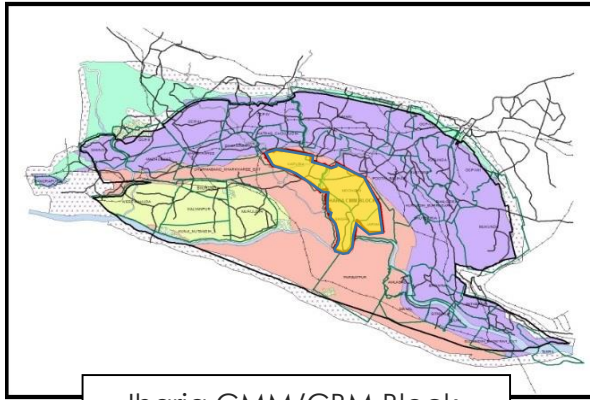
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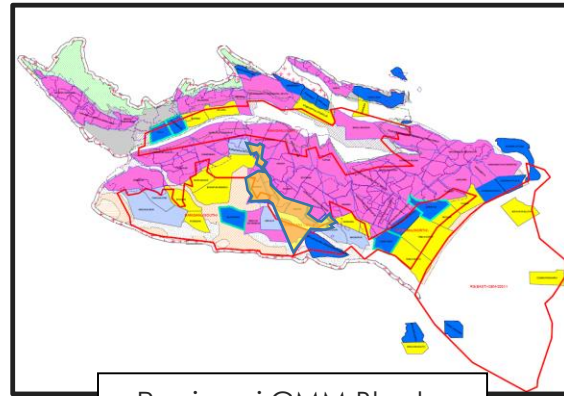
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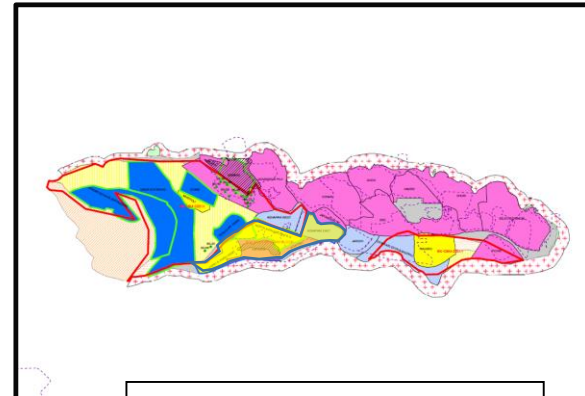
EFFORTS MADE BY CMPDI/CIL FOR DEVELOPMENT OF CBM/CMM IN INDIA



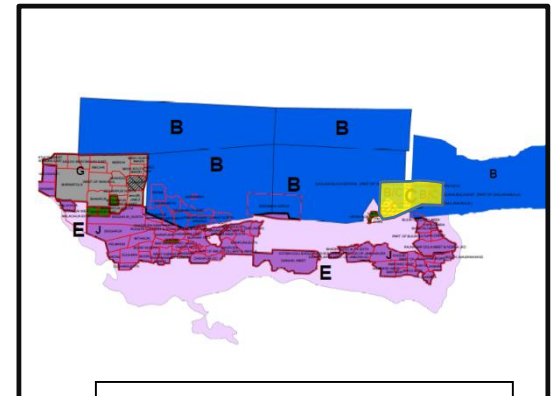
Jharia CMM/CBM Block



Raniganj CMM Block



East Bokaro CBM Block



Sohagpur CBM Block

SHEKHAR SARAN

Chairman-cum-Managing Director,

CMPDIL/BCCL



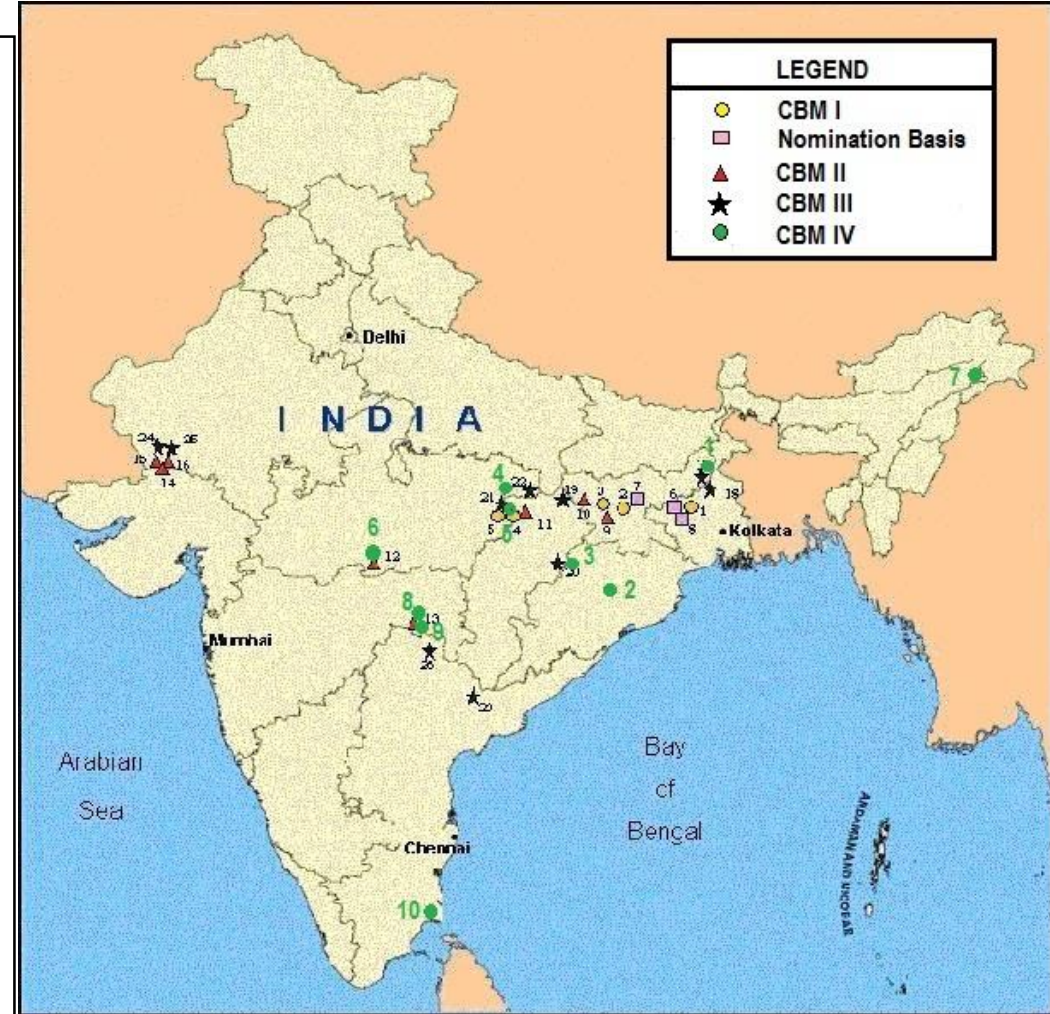
CBM Development

- CBM related studies by CMPDI started in early 1990s;
- Thrust for CBM development came with pronouncement of CBM Policy in 1997 by the Govt of India;
- Ministry of Petroleum and Natural Gas was made administrative Ministry and Directorate General of Hydrocarbons the Nodal agency for development of CBM in India;
- Policy outlined attractive fiscal incentives & mode of CBM blocks allotment for commercial development through global bidding;
- CMPDI played key role in identification and carving of the prospective CBM blocks;
- Being repository of massive exploration and mine related data, CMPDI was assigned responsibility of identification of prospective CBM blocks and preparation of Data Dossiers for DGH;
- CMPDI prepared most of the Data Dossiers of the awarded 33 CBM blocks in 4-rounds of bidding by the MoP&NG between 2001 to 2009.



CBM Development in India: Present Status

- 33 CBM blocks awarded: Area 16613 sq km;
- Prognosticated Resource: 1.7 TCM (62.4 TCF);
- Established GIP: 280 BCM (9.9 TCF);
- Commercial Production since July, 2007;
- Blocks in Development/Exploration Phase: 9;
- Many allotted blocks are under relinquishment or relinquished;
- Current Production: 1.7 MMSCMD from 4 CBM blocks.





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Opportunities in CBM/CMM Development by CIL

- India is bestowed with substantial reserves of coal (319 BT, April 2018)
- India is the 3rd largest producer of coal in the world;
- CIL produced historically high 606 MT of coal during FY 2018-19;
- Many of the coalfields store high rank and Gassy coal seams posing challenges in coal mining;
- CMPDI plays proactive and important role which has facilitated CBM/CMM development in the country.



- CIL operates about 375 coal mines, of which, more than 100 are Degree-II and 18 are Degree-III mines;
- Since mining operation in CIL areas is very old, a good understanding has been developed regarding geo-mining conditions;
- Target seams for CMM development are Virgin Coal seams lying below the active mining/ worked out/ goaved/ abandoned areas;
- CIL is putting thrust on Mining of Deeper Coal deposits in near future;
- Considering safety of mine personnel and to enhance mine production safely, Pre-drainage of methane will be taken up initially in gassy seams;
- Development of CBM in CIL areas is being pursued as an effort towards extraction of coal through eco-friendly manner with due regard to safety reflected through CIL's corporate mission.



Glimpse of disasters due to methane explosion in underground mines in India

Sl. No.	Name of the coal mine	Date of disaster
1.	Nadirkhan mine	16.02.1908
2.	Dishergarh mine	07.02.1910
3.	Namdang mine	26.11.1910
4.	Kendwadih mine	09.11.1911
5.	Chowrasi mine	22.10.1913
6.	Dishergarh mine	20.07.1916
7.	Dishergarh mine	18.11.1918
8.	Amlabad mine	28.02.1921
9.	Khost mine	09.03.1922
10.	Parbelia mine	04.01.1923
11.	Bagdigi mine	29.06.1935
12.	Kurhurbaree mine	24.07.1935

Sl. No.	Name of the coal mine	Date of disaster
13.	Poidih mine	18.12.1936
14.	Begunia mine	19.03.1946
15.	Damra mine	14.03.1954
16.	Amlabad mine	05.02.1955
17.	Chinakuri mine	19.02.1958
18.	Dhori mine	28.05.1965
19.	Jeetpur mine	18.03.1973
20.	Sudamdih mine	04.10.1976
21.	Baragolai mine	22.01.1979
22.	Tipong mine	19.11.1993
23.	Bhatdih mine	06.09.2006
24.	Anjan Hill mine	06.05.2010



Benefits of Pre-drainage of Methane

- Improves worker's safety
- Prevents gas from escaping into the mine environment
- Reduces ventilation cost
- Reduce methane-related coal production delays, thereby increasing productivity

An example case for mitigation revenue loss

- In Moonidih XVI Top PSLW (BCCL), even one day stoppage due to methane, will result in a revenue loss of Rs. 87 Lakhs (\$130,000) approx.
- Similarly, in Jhanjhra mine (ECL), the expected revenue loss will be Rs. 1.41 Cr. (\$212,000)



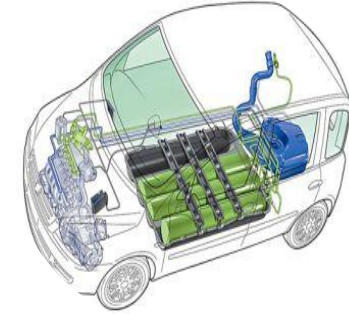
Benefits of Development of CBM/CMM



While methane is considered as one of the biggest hazards for UG coal mines, it is an important and relatively cleaner source of energy



Thus, utilisation of methane emission can provide significant energy, economic and environmental benefits



In addition to the direct financial benefits that may be enjoyed by sale of coal mine methane, several indirect economic benefits may also be achieved.





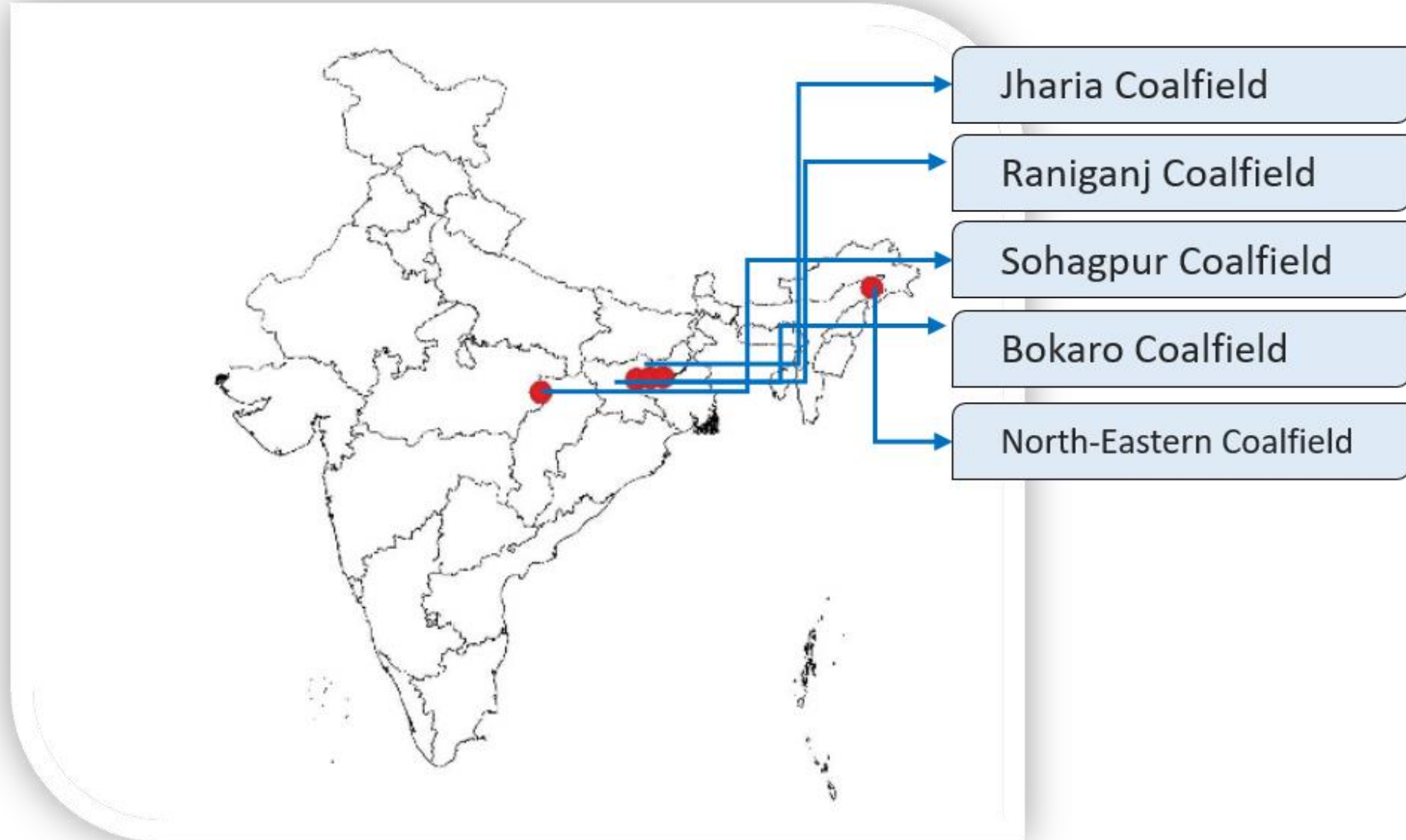
- For pipeline injection
- To meet the fuel needs of local industries
- For power generation (for on-site use or sale to the power grid) – on-site use of power thus generated will cut-down power bills
- For other on-site uses, such as fuelling mine vehicles after being compressed, etc.



Government of India's Recent Initiatives

- MoC, vide OM dated 29th July, 2015, conveyed approval for exploration and exploitation of CBM from areas under mining lease allotted to CIL;
- In Nov.,15, MoP&NG issued guidelines for exploration and exploitation of CBM by Coal India Limited and its subsidiaries from areas under coal mining lease allotted to CIL.
- The Policy framework for Early Monetization of CBM (April, 2017) provide marketing and pricing freedom to sell the CBM at Arm's Length Price in domestic market;
- MoP&NG issued revised notification on 8th May, 2018 on consolidated terms & conditions for grant of exploration and exploitation rights to CIL & its subsidiaries from coal bearing areas, for which, they possess mining lease for coal in continuation of CBM Policy,1997. Accordingly, Mining lease for coal will also be deemed lease for CBM;
- In April, 2018, CCEA has given its approval for exemption of applicability of the ORD Act and PNG Rules within coal mining leasehold areas, Production and permission to engage experienced technical developers or service contractor from India or abroad as third party for CBM exploitation, etc.

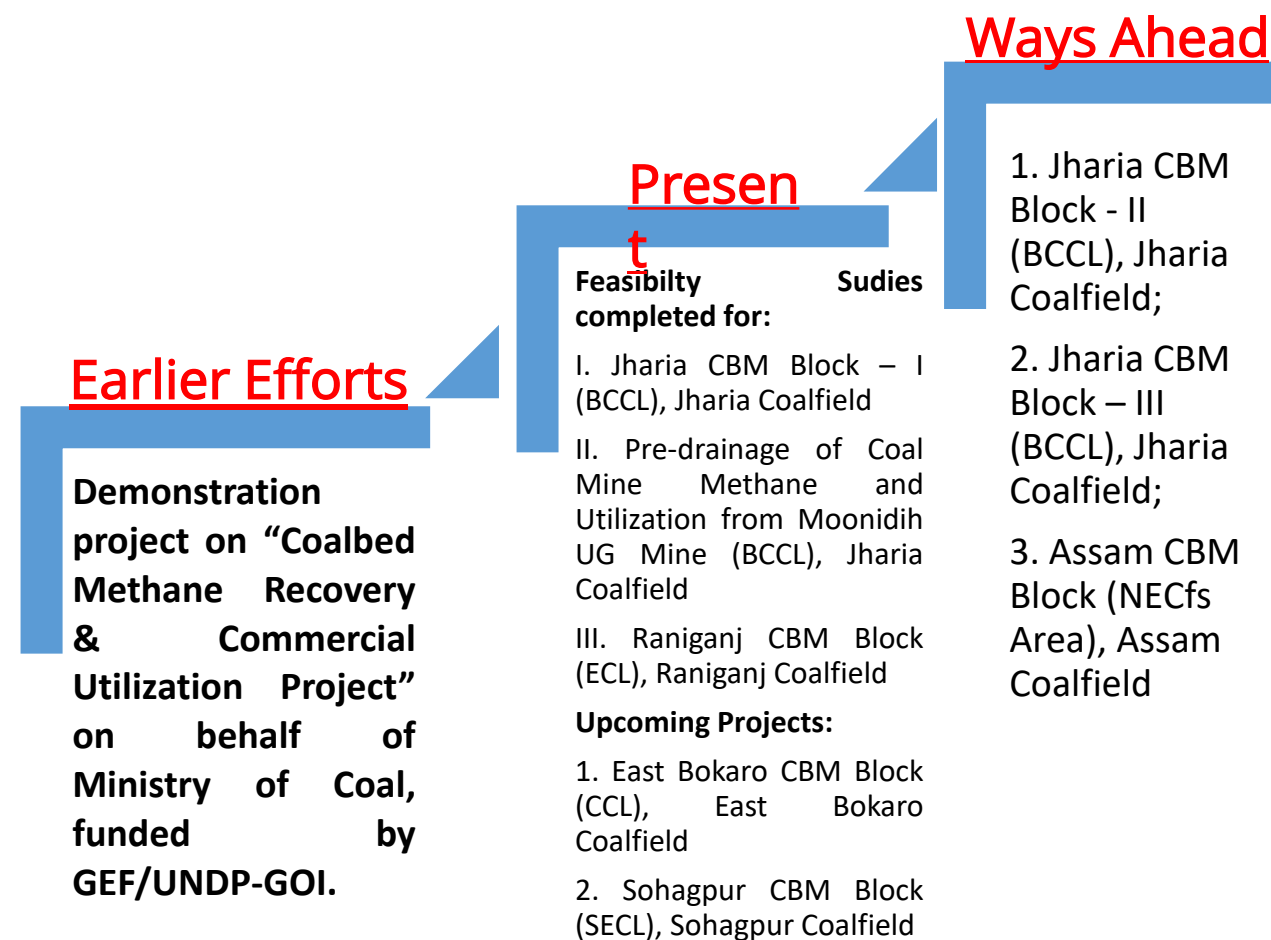
Coal Fields under the vision



SI.	COALFIELD	COAL COMPANY	CBM BLOCKS COVERING COAL BLOCK(S)	AREA (Sq. Km)	COAL RESOURCE (mt)	PROGNOSTICATED CBM RESOURCE (BCM)	REMARKS
1	JHARIA Cf	BCCL	KAPURIA-MOONIDIH-SINGRA	24.33	1962	25.22	Project Feasibility Report approved in-principle
2	JHARIA Cf	BCCL	POOTKEE - BULLIHARY	16	1116	7	CBM block to delineate
3	JHARIA Cf	BCCL	MOHUDA BASIN, MADHUBAND, KHARKHAREE, DHARMABAND	34	1470	5	CBM block to delineate
4	RANIGANJ Cf	ECL	KALIDASPUR, KALIKAPUR, AMRITNAGAR ANKOLA, NIMCHA, DAMRA KOADIH, KALIPAHARI, GHUSICK, AJOY II, BHANORA WEST	57	998	3.93	Project Feasibility Report approved in-principle
5	EAST BOKARO Cf	CCL	NORTH KATHARA, UCHITDIH, JARANGDIH SHAFT, KATHARA, ASNAPANI EAST	15	1560	5	CBM Block is under delineation
6	SOHAGPUR Cf	SECL	KEWAI, BHERABANDH MINE, BHERABANDH WEST, CHULIABULIA,	97	321	2.5	CBM Block is under delineation
7	MAKUM Cf	NECfs (CIL)	JAGUN, TIKAK, TIPONG, TIRAP	19	408	1	CBM block to delineate
						49.65 BCM	

FURTHER DELINEATION OF CBM AREAS WILL BE UNDERTAKEN IN GASSY COAL SEAMS LYING VIRGIN BELOW THE WORKING/WORKED OUT COAL SEAMS.

- A successful demonstration project on “Coalbed Methane Recovery & Commercial Utilization Project” on behalf of Ministry of Coal, funded by GEF/UNDP-GOI proved the efficacy of technology for extraction & utilization in Indian geo-mining condition
- Recent initiatives by GoI leads CIL-CMPDI to take up development of CMM/CBM actively.
- Initially Jharia and Raniganj Coalfields have been undertaken for CMM/CBM Development in BCCL command area and ECL command areas.
- More blocks are in other coalfields under CIL leasehold are under delineation



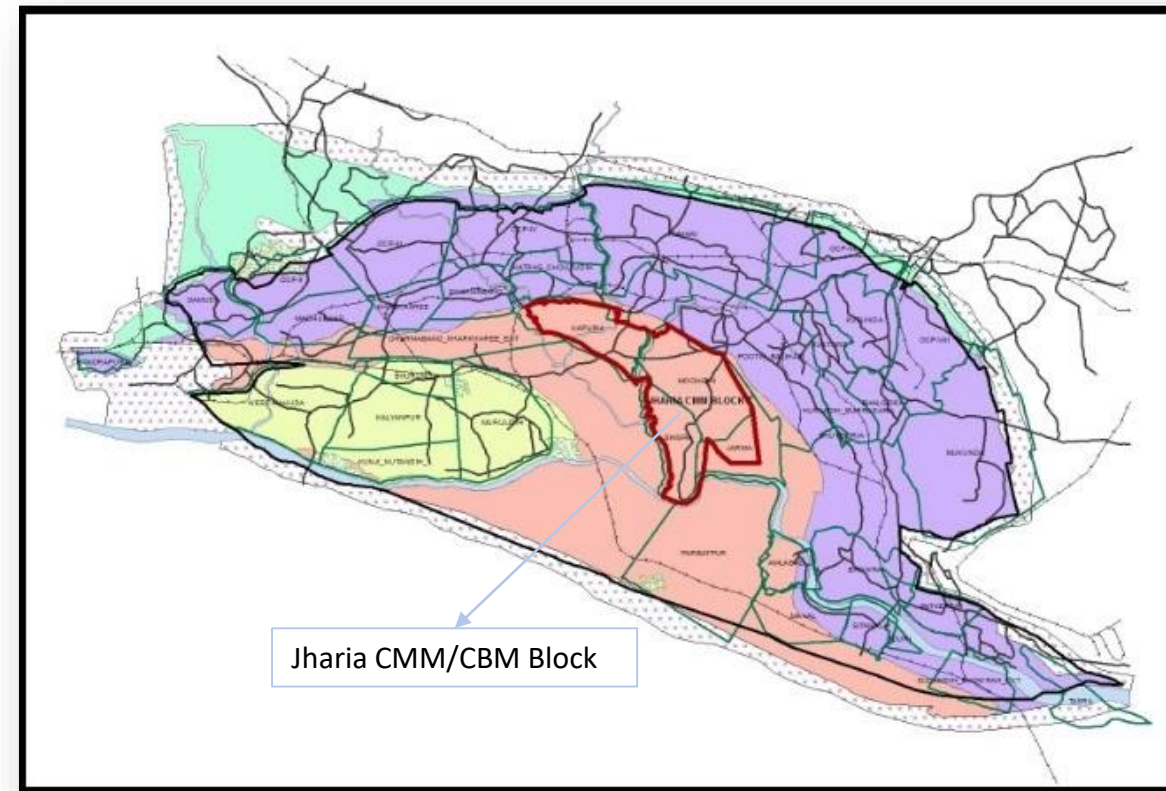


1. Pre-drainage of methane at Moonidih mine (BCCL), Jharia Coalfield

- Working Seam XVI has been proposed to recover methane for enhancing production and safety and gainful utilization of gas.
- A Global Tender for “selection of technology/service provider for Pre-drainage of Coal Mine Methane and utilization” is to be published very soon

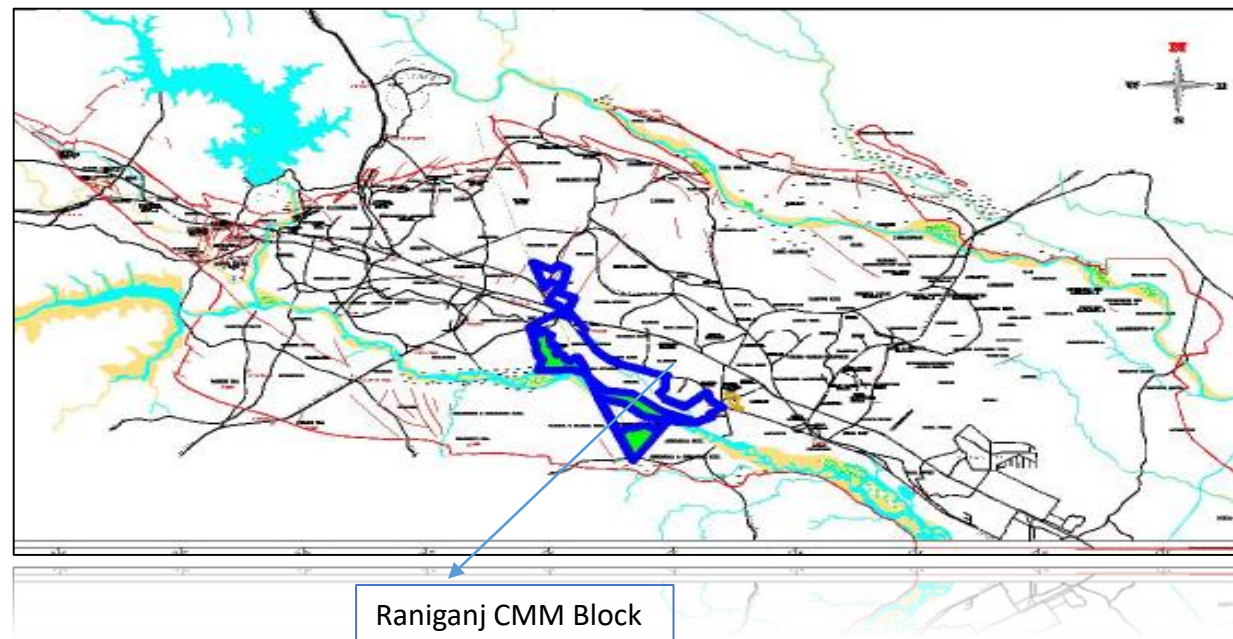
2. Jharia CMM/CBM Block (BCCL Area):

- A Project feasibility report for a block of about 24.32 sq km for commercial development in the mining leasehold area of BCCL having CBM resource of 25.2 BCM has been prepared and approved by competent authority.
- The CBM block will be developed through MDO route & CMPDI will provide Project Management Consultancy





- An area of about 57 sq km has been carved out in Raniganj Coalfield with Resource of 3.93 BCM
- Project feasibility report of an area of 57 sq km in Raniganj Coalfield has been prepared based on Reservoir Modeling & Techno-Economic.
- The block will be developed through MDO Route, for which, CMPDI will provide PMC





Feasibility studies are being done for the following blocks:

- East Bokaro CBM Block (CCL), East Bokaro Coalfield;
- Sohagpur CBM Block (SECL), Sohagpur Coalfield;

Following CBM blocks also have been identified for extraction of CBM/CMM in near future:

- Jharia CBM Block - II (BCCL), Jharia Coalfield;
- Jharia CBM Block – III (BCCL), Jharia Coalfield;
- Assam CBM Block (NECfs Area), Assam Coalfield.



Development of CBM with ONGC

- Two CBM blocks, (1) Jharia CBM Block and (2) Raniganj North CBM Block, have been allotted to the Consortium of CIL & ONGC on nomination basis by GoI/MoP&NG for commercial development;
- ONGC is the Operator for these CBM blocks;
- FDPs for these CBM blocks were approved by the Government of India in July, 2013;
- Revised Feasibility Report considering SAIL coal block overlap is being prepared by ONGC
- Steps for resolving issues on Overlap of Jharia CBM Block with CIL Coal blocks have been taken
- Raniganj North CBM block: Revised Feasibility Report is being prepared by ONGC considering BAPL overlap.



- Generates CBM specific data during exploration stage under Promotional Regional Exploration (PRE) Scheme;
- CBM Lab Services: State – of – Art Laboratory established for CBM & Shale Gas parametric studies and Mine air analysis in CMPDI.



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ROCK EVAL-6



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R&D Efforts for Development of CBM/CMM

- S&T Project on “Capacity Building for Extraction of CMM Resource within CIL Command Areas”; Implementing Agency - CMPDI and Sub Implementing Agency - CSIRO, Australia;
- S&T Project on “CBM Reserve Estimation for Indian coalfields”: Principal Implementing Agency – IISTE, Shibpur; Sub Implementing agencies: NGRI Hyderabad, TCE Kolkata & CMPDI;
- S&T Project on “Shale gas potentiality evaluation of Damodar Basin of India” : NGRI Hyderabad, CMPDI



- Established under the aegis of US EPA and MoC and is functional at CMPDI (Ranchi) since November, 2008 with an aim to develop CMM/CBM in the country;
- It showcases opportunities of CBM/CMM development in India;
- Training programs;
- International workshops
- This is the fourth workshop organized on development of non-conventional energy resources in India i.e; CBM/CMM at Ranchi (Jharkhand), India.

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Thank You