



INTERNATIONAL COOPERATION

ANNUAL REPORT 2019-20

INTERNATIONAL CO-OPERATION

I. Indo-US Collaboration

• India CMM/CBM Clearing House:

India CMM/CBM Clearinghouse is functional at CMPDI, Ranchi under the aegis of Ministry of Coal (MoC) and United States Environmental Protection Agency (US EPA) since 17th November, 2008. It has been established with the financial support of US EPA and Coal India Ltd. on behalf of Ministry of Coal in pursuant to a Govt. level understanding between MoC & United States Environmental Protection Agency (US EPA). The Memorandum of Understanding (MoU) was signed on 16th November, 2006 between the representatives of the Government of United States of America (USA) and the Government of India at US EPA Headquarter in Washington DC in this regard. The website of the clearinghouse is <http://www.cmmclearinghouse.cmpdi.co.in>. On completion of initial three years' term, it was extended twice for another three years' terms each. US EPA further extended grant support in April, 2018 for additional three years i.e. 2018-21.

Implementation of CMM/CBM projects is one of the action programme of India's INDCs during COP-21 meeting. Under Global Methane Initiatives (GMI), a Pre-feasibility study on pre-mine methane drainage feasibility for (a) Sawang UG mine, East Bokaro Coalfields in 2014 and (b) Chinakuri UG mine, Raniganj Coalfields in 2016 and Pootkee Bulliary UG mine in Jharia Coalfields in 2019 has been undertaken by the US EPA under the Coal Bed Methane Outreach Programme (CMOP).

International workshops were organized jointly by US EPA-GMI & CMPDI-CIL under aegis of the MoC on (i) "CMM Development in India: An Opportunity Area" (November, 2008), (ii) "Development of Coal based Non-conventional Energy Resources in India" (November, 2013), (iii) "Best Practices in Methane Drainage and Use in Coal Mines" (March, 2017) and (iv) "Optimum Utilization of CMM/CBM in India" (April, 2019) at Ranchi (Jharkhand) India, which is centrally located for the coal mining industry in eastern India.

• Coal Mine Methane (CMM):

"Pre-drainage of Coal Mine Methane (CMM) from Moonidih UG Mine" of Bharat Coking Coal Limited (BCCL) in Jharia Coalfields is proposed to enhance production and safety and recovered gas may also be gainfully utilized. To develop it, a Global e-Tender is to be floated/issued by BCCL for the selection of the suitable and experienced developer for Pre-drainage of methane from UG mine under concept to commissioning basis including operation and maintenance.

CBM/CMM blocks have been identified in and around active mining areas under CIL command areas for commercial exploitation of methane initially in Jharia Coalfields (BCCL command area), Raniganj Coalfields (ECL command area), Sohagpur Coalfields (SECL command area). Its development is proposed to be done through CBM Developer by respective subsidiary on Global Tendering for the commercial development of CBM/CMM in India.

ii. Indo-Australia Collaboration

CMPDI has a Memorandum of Understanding (MoU) with Commonwealth Scientific and Industrial Research Organisation (CSIRO), which has been renewed for further ten years, signed on 16th November, 2018 at Brisbane (Australia) and exchanged on 22nd November, 2018 at Sydney (Australia) in the august presence of Hon'ble President of India to encourage programmes of exchange and collaboration in areas of mutual interest and benefit to both the organizations.

• Capacity Building for CMPDI Lab:

CMPDI has established a State of the Art Coal Bed Methane (CBM) lab that can carry out parametric studies for resource estimation and reservoir characterization for CBM and Shale gas.

A S&T Project “Capacity building for extraction of CMM Resource within CIL command areas” is under implementation under S&T funding of MoC. It is being jointly implemented by CMPDI and CSIRO, Australia.

iii. Indo-Russian Collaboration

An Indian delegation, led by Hon’ble Minister of Commerce and Industry, Govt. of India visited Russian Far East Region during 12-13th August, 2019 to explore potential for increased cooperation in Coal, Mining and Power Sectors between India and Russian Far East Region.

A bilateral Memorandum of Understanding (MoU) was executed between Coal India Limited (CIL), a Public Sector Undertaking under the aegis of the Ministry of Coal and Far East Investment & Export Agency (FEIEA), an agency of the Russian Federation under the Ministry of Development of Far East and the Arctic in the glorious presence of Hon’ble Prime Minister of India and Hon’ble President of the Russian Federation on 4-Sep-2019 during the Eastern Economic Forum in Vladivostok, Russia. This relationship is aimed at leveraging the cordial bilateral relations to venture into the business of acquisition, development and operation of coking coal assets in the Far East Region of Russia.

UCG Experts from Skochinsky’s Institute of Mining (SIM), Moscow participated in the Workshop on “Prospects of Underground Coal Gasification (UCG) in India”, held on 13th November, 2019 at New Delhi. The dignitaries from NITI Aayog, Ministry of Coal and Officials and representatives from Industries (coal & lignite), scientific organizations also participated actively.

iv. Indo-Poland Collaboration

The Secretary, Ministry of Coal (MoC), Govt. of India led a delegation comprising Joint Secretary (JS), MoC, Adviser, MoC and Chairman, CIL to Poland during 6th–9th June, 2016 to understand the energy policy of the Republic of Poland with particular reference to development of coal, coal mining technologies, reclamation of mined-out areas, capture and uses of Coal Mine Methane (CMM) and technologies for development of underground (UG) mines etc.

A 5-member team of Polish Experts (3 from AGH University, Krakow, Poland & 2 from GIG, Katowice, Poland) visited MoC, CIL (HQ), ECL, BCCL and CMPDI (HQ) along with a team of 4 members from manufacturers of Poland. This visit (4th-7th July, 2016) was made by Polish Experts in sequel to the visit of the Indian delegation, led by the Secretary (Coal), MoC, Govt. of India to Poland. In view of the above, a Poland Technology Group (PTG) has been constituted, which visited India. A detailed discussion was held on the identified areas at CMPDI (HQ), Ranchi between Polish Experts and Officials of PTG & other officials of MoC, Coal India Limited/CMPDI, wherein technical co-operation was sought on the identified areas from Polish Experts. Five areas for co-operation are short listed namely,

- Slope stability of overburden dumps (using advanced modelling technique),
- Dry Coal beneficiation,
- Extraction of remnant coal pillars with surface structure protection,



- Pre-drainage of Coal Mine Methane (CMM) and commercial recovery of Coal Bed Methane (CBM), and
- Control measures for mine fires of Jharia for obtaining the solutions from Polish side.

A data dossier on the above identified 5 areas was prepared by CMPDI with necessary technical help from different subsidiaries of CIL and sent to the General Manager (PMD), CIL on 11.10.2016 (soft-copy through e-mail) and also on 22.10.2016 (hard copy as desired by GM(PMD), CIL). The matter was further being taken up at CIL level for onward communication to Poland experts.

In continuation of the collaborative studies, a team of 4 officers (2 from CMPDI and 1 each from CCL & BCCL) visited Poland from 13th-17thFebruary, 2017 to enhance skill in the field of methane extraction and dry coal beneficiation.

- Team of two officers (comprising of one each from CMPDI and BCCL) visited Coal Mine Methane (CMM) extraction and utilization sites and observed the technologies, being followed under guidance of Dean, AGH University of Science and Technology, Krakow, Poland.
- The coal beneficiation team of two officers (comprising of one each from CMPDI and CCL) were taken to Comex AS, Kety, Poland to see a dry beneficiation demonstration plant based on X-Ray sorting technology, developed by Comex Innovative & Industrial Technologies. The team was also taken to one FGX Dry Coal Processing Plant at Poczesna, Cz. stochowa, Poland. Poland does not manufacture FGX separator; therefore, they couldn't give any figure related to organic efficiency.

A polish delegation involving representatives from M/s JSW, M/s PeBeKa and Central Mining Institute, Poland visited India during January, 2018 and a meeting was held on 16.01.2018 with the Indian representatives involving officials from CIL & SAIL. Capabilities of the above institutes/organization of Poland were presented and views exchanged for further collaboration in different mining activities including participation in global tender

for CMM Drainage in Moonidih UG Mine of BCCL for which Global Bid was published in August, 2018 by BCCL. CIL also presented the brief activities, undertaken during the last few fiscal and the short-listed areas identified under PTG for collaboration. The data dossier, which was earlier sent to Polish group was again handed over to the Dy. Director General of the Central Mining Institute, Poland.

MoU on cooperation in the area of coal mining has been signed between Govt. of Poland and Govt. of India on 4th February, 2019 at New Delhi. Polish delegation visited CIL on 7th Feb, 2019 to explore the possibilities for joint cooperation for which a core team has been constituted, comprising of GM(PA), CIL, GM(TS) to DT, CIL and GM(Geology), CMPDI.

Polish company is regularly participating in the Bidders' Meet relating to CBM/CMM Global tender.

v. India-Japan Collaboration

a. Dry Coal Beneficiation:

In response to the e-mail of Advisor (Projects), MoC dated 14.03.2016, the Chairman, M/s Nagata Engg Co. Ltd., vide e-mail dated 19.03.2016, was requested to send the detail technology including specification and performance data, commercial availability of the separator and cost thereof with other supports (if any). The same is also being followed up from CMPDI's end. M/s Engg Co. Ltd. replied, vide email dated 27th Sept 2018, that the Dry Coal Preparation equipment was at the developing stage.

b. Slope Stability Monitoring:

The 6th meeting of India-Japan Coal Working Group was held on 17.04.2018 through video conferencing and subsequent meeting of ministers was held on 01.05.2018. As per the Joint statement, following areas of interest were shortlisted for cooperation, if required:

- Slope Stability Monitoring: Possibility of any collaboration on G2G basis.
- Online monitoring of quantity and quality of Lignite/Coal during Mining.
- Remote real time monitoring of spontaneous

ignition/combustion and prevention methods for lignite/coal stockyard due to continuous storage.

- Introducing monitoring of coal mining technologies & human resource development in the areas of the underground mining and the safety management: To explore cooperation in this area.
- To build up close relationship in coal based electricity generation and energy sector.
- Clean Coal Technologies (CCT) including high efficiency and low emission technology.
- Air quality control technology.
- Renewable energy.
- Promotion of energy efficiency.

c) **Japan-India Energy Dialogue**

The 10th Japan-India Energy Dialogue held on 10.12.2019 in New Delhi. Japanese-side, led by HE Mr. Kajiyama Hiroshi, Minister of Economy, Trade and Industry, and Indian-side, led by Hon'ble Minister of State for Power, and New & Renewable Energy and Skill Development & Entrepreneurship, Shri Raj Kumar Singh attended the meeting. A joint statement of the Energy Dialogue was signed by both the ministers and it was jointly agreed that - "Both countries have been continuing the discussion to consider the possibility of future cooperation since the last Coal Working Group, and now discussing towards implementing the invitation training program".

vi. **International Cooperation with South-Africa:**

There exists an India-South Africa Joint Ministerial Commission (JMC). Under the aegis of JMC, there are eight Sectoral Sub-Committees out of which Sub-Committee on Minerals and Energy is one of them. Joint Secretary(IC), Ministry of Coal is the co-chair on the Sub-Committee on Minerals and Energy. As per convention, nearer to the Joint Ministerial Commission, sectoral Sub-Committees also meet to discuss the issues concerning their sectors, review the progress of earlier decisions and prepare a roadmap for further cooperation. Coal India Limited is looking forward for possible cooperation in the areas of technology transfers and training of engineers in relevant

areas of coal mining and beneficiation technologies.

vii. **Initiatives on Surface Coal Gasification (SCG):**

As a commitment to reduce environment footprint towards addressing Climate Change, Ministry of Coal is promoting the novel initiatives for cleaner and alternative uses of coal through SCG route, viz. conversion from coal to syn-gas and subsequently into chemicals. Such endeavours will position Indian coal as a raw material for production of chemicals rather than just a product of energy.

To start with, Talcher Fertilizers Ltd., (TFL - a JV company of CIL with RCF, GAIL and FCIL), has been entrusted to set up an integrated coal gasification based urea plant at the premises of closed fertilizer plant of FCIL at Talcher (Odisha). Work has been awarded to M/s Wuhuan Engineering Co Ltd, China for setting up of Coal Gasification plant and Ammonia-Urea plant.

In another initiative, CIL is exploring the possibilities to venture into the Coal-to-Chemicals sector on stand-alone basis by setting up a Coal-to-Methanol plant at Dankuni Coal Complex (near Kolkata). Various pre-project activities have been initiated in this regard through M/s Projects & Development India Limited (PDIL).

International Co-operation in SCCL

- A collaborative Research project by CSIRO, Australia for Stability Analysis and Design Optimization of OB Dumps and deep OC Mines at SCCL is under progress.
- Mine Advise Pty. Limited (Russell Frith) – Australia is guiding and monitoring the implementation of new generation Longwall technology at Adriyala Shaft Project.
- Training by SIMTARS, Australia for preparation and implementation of Safety Management Plans.

International Co-operation in NLCIL

In order to meet country's growing demand for coal, international cooperation with the advanced coal producing countries is considered for bringing in new technologies both in underground and in opencast sectors for efficient management in the coal industry, skill development and training etc. Keeping the above in view, joint working group on coal/lignite had been setup

with USA, France, Germany, Russia, Canada, Australia, Japan and China. The priority areas, inter-alia, include acquisition of modern underground technology, introduction of high productive opencast mining technology, working underground in difficult geological conditions, fire control and mine safety.

Training of Indian personnel as well as assimilation of the technology is an important consideration. In this regard, NLC India Limited is seeking international cooperation for producing

composite valuables Lignite in NLCIL Mines.

To develop further cooperation and possible projects implementation in the field of metals, mineral, rare earth in the Russian Far East, Cooperation agreement were signed between Far Eastern Mining Company (LLC) (FEMC) and NLC India Limited at the Eastern Economic Forum, held in Vladivostok during September, 2019.

