



# INTERNATIONAL COOPERATION

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## INDIA-EU COLLABORATION

In the meeting of India-EU Energy panel dialogue follow up held on 26.09.2017, it was conveyed that EU should send a comprehensive proposal covering various areas, viz. training components, exchange of technology, physical activities, coal gasification, and carbon capture and the same is awaited.

## INDIA-US COLLABORATION

Indian delegation led by Secretary (Coal) attended 4<sup>th</sup> Post Combustion Capture Conference (PCCC4) from 5<sup>th</sup> to 8<sup>th</sup> September, 2017 at National Carbon Capture Centre (NCCC) in Birmingham, Alabama USA.

The conference dealt with the principles of Carbon capture, various process involved, different methodologies practiced/ being developed for carbon capture, the details regarding storage and/or utilizing captured CO<sub>2</sub> for EOR (Enhanced oil Recovery), fertilizer production, conversion to valuable liquid hydro carbons , conversion to dry ice etc, the techno economic and its dynamics with regard to Carbon capture.

Implementation of the CO<sub>2</sub> capture technology can be explored on a small scale as a pilot project involving all stake holders like Coal producers, Power Utility, Refineries, Fertiliser units, Steel industries, Government agencies etc. as an integrated unit which is under consideration.

## INDIA-AUSTRALIA COLLABORATION

A delegation led by Secretary (Coal) visited Australia from 18.06.2017 to 24.06.2017 and the following areas were identified for collaboration-

1. One S&T Project with CSIRO, Australia for "Capacity Building for extraction of CMM Resource within CIL Command Areas" and CMPDIL (CIL) is progressing.
2. Proposal for R&D Project for "Development of Virtual Reality Mine Simulator (VRMS) for improving mine safety and productivity" prepared by IIT-ISM, in association with CMPDI is being finalized which has been approved by R&D Board, CIL.

3. Action for further collaboration has been initiated by CIL with CSIRO in the following areas-

- (a) 3D Seismic Survey,
- (b) Hydro-Geological Modelling,
- (c) Longwall Top Coal Caving (LTCC) (Method can be used for high production mine in thick seam underground mining)
- (d) Wongawilli method of coal mining (This underground mining method can utilize the Continuous Miner or Bolter Miner in Longwall configuration giving higher productivity)

Under the proposed Australia-India Energy Dialogue, 4 working groups have been proposed which are: renewable energy and smart grid, power and energy efficiency, coal and mines, oil and gas.

A meeting with Australian delegation held in the Ministry on 13.11.2017. The delegation comprised geoscience experts from Australian states who shared information about the latest policy developments in exploration in Australia and also promoting exploration opportunities in Australia.

The Australians are interested in investment opportunities and exploration avenues of metal mining in their three States that is Western Australia, Tasmania and New South Wales. A policy on investment in off-shore assets is still under finalization by CIL.

## INDIA-POLAND COLLABORATION

A delegation led by Secretary (coal) and accompanied by Chairman, CIL visited Poland from 6<sup>th</sup> to 9<sup>th</sup> June'2016 for talks on the development of economic co-operation with Poland in the deep mining and extractive industry.

After this visit a Polish delegation came to India and had discussions with CIL officials on 5<sup>th</sup> July'2016 and training of Indian executives was agreed to and 15 selected executives of various disciplines from the subsidiaries of CIL had been sent to Krakow, Poland for training in February'2017 for 5 weeks.

The 2<sup>nd</sup> India-Poland JWG on Coal and Energy was held on 23.11.2017 and following areas were identified for cooperation in the agreed minutes -

- (a) Slope stability of overburden dumps using advanced modelling technique
- (b) Dry coal beneficiation
- (c) Extraction of remnant coal pillars with surface structure protection
- (d) Pre-drainage of CMM and commercial recovery of CBM, and
- (e) Control measures for mine fires of Jharia
- (f) Inclusion of the clauses proposed by the Indian side in draft MoU on cooperation in the mining and mining equipment sector to implement technology demonstration projects on the ground.

A draft Memorandum of Understanding on cooperation in the mining and mining equipment sector between the Minister of Economic Development and Finance and the Minister of Energy of the Republic of Poland and the Ministry of Coal of the Republic of India has been suggested by the Polish Side which is under examination.

### INDIA- MOZAMBIQUE COLLABORATION

A Memorandum of Understanding (MoU) was executed on 26.05.2006 at Maputo, Mozambique between the Ministry of Coal, Government of India and the Ministry of Mineral resources and Energy, Government of Mozambique.

In 2009, CIL won bidding process for grant of Prospecting License of two coal blocks located in Tete Province of Mozambique. Based on results of exploration activities and mineability study revealed that the above coal blocks were not techno-economically viable for commercial mining. Subsequently CIL had relinquished the leasehold area to the Government of Mozambique.

So far no potential coal seam has been identified in coal blocks and Mozambique is positioning itself more as an oil rich country than a potential coal rich country the -construction of Apex Planning Organization (APO) and Apex Training Organization (ATO) has been cancelled.

### INDIA- SOUTH AFRICA COLLABORATION

An agreement on co-operation in the fields of Geology and

Mineral Resources between the government of the Republic of India and the government of the Republic of South Africa was signed on 17.10.1997 for five years and the following specific areas of co-operation were identified:

1. Multipurpose utilization of mineral resources, geological research and mineral promotion
2. Exchange of scientist, experts and delegations and training of personnel;
3. Joint organization of workshops, seminars and symposium

Pursuant to a G2G dialogue in August 2015 between India & South Africa, it was proposed to explore the possibility of a collaboration between Government owned entities of the two countries represented by Coal India Limited (CIL) and African Exploration Mining & Finance Company (AEMFC). It was proposed to sign a Memorandum of Understanding (MOU) between the two companies for identification, acquisition, exploration, development and operation of coal assets in South Africa. Execution of Memorandum of Understanding (MOU) between CIL and AEMFC has been approved by CIL Board. The same is contingent upon revival of bilateral treaty between Government of India and Government of South Africa in the Mineral Sector including coal, as per the South African High Commission to India.

A delegation led by Secretary (Coal) visited South Africa from 06.02.2017 to 09.02.2017 to attend "Mining Indaba 2017" which is an annual professional conference dedicated to the capitalization and development of mining interests in Africa. The following areas of cooperation were identified:

1. Mining of coal using Continuous Miner with Room and Pillar and other methods and with improvisation in back filling of voids which will prove to be boon in liquidation of coal reserves standing on pillars.
2. By use of advanced coal conversion technologies like Fischer-Tropsch synthesis, as in CTL, vast Indian coal resources could become an important alternative to crude oil.

Third Underground Coal Gasification (UCG) network workshop was held on 10<sup>th</sup> October, 2017 at Eskom Research Institute Auditorium, Johannesburg, South Africa. The workshop aimed to provide an opportunity to learn about South African UCG roadmap, latest developments in UCG technology and projects.