

INTERNATIONAL COOPERATION

11.1 SAARC TECHNICAL SEMINAR ON COAL

As per decision taken in the SAARC Energy Ministers meeting held on 7.3.2007 in India, Ministry of Coal conducted a SAARC Technical Seminar on Coal on 16th October, 2007 in Kolkata on the strategies on promotion of coal development and clean coal technologies in SAARC region. Nine delegates from different SAARC member countries excepting Maldives participated in the Seminar. The 4th meeting of the SAARC working Group on Energy was held in Islamabad during 26-27th March, 2008. The Working Group reviewed the status of implementation of various decisions taken earlier by SAARC Energy Ministers and the working group and the Energy Dialogue. The 5th meeting of the SAARC Working Group on Energy was held during 29-30 April, 2009 in Thimpu, Bhutan. As decided in the meeting, draft Terms of Reference (ToR) for Coal for the Expert Group on Technology/knowledge sharing under the SAARC Working Group has been proposed by this Ministry.

11.2 EUROPEAN UNION (EU)

The India-EU Energy Panel was constituted as a follow up of a decision taken at the 5th India-EU Summit held in Hague in November, 2004. The first meeting of the Indo-EU Energy Panel was held in Brussels on 29th June, 2005 in which emerging energy scenario and future prospects for development of the fuel chains and key priorities for cooperation were discussed. The Panel decided to set up working groups in the following areas:

- Coal and clean coal conversion technologies
- Energy efficiency and renewable energies
- Fusion energy including India's participation in International Thermo nuclear Experimental Reactor (ITER) project.

As a follow up of the decision made by the Panel, the Working Group on Coal and Clean Coal Technologies was constituted in March, 2006. 1st meeting of the working group on Coal and Clean Coal Conversion Technologies was held on 22-3-2006 at New Delhi. 2nd meeting of the India – EU Working Group on Coal and Clean Coal Technology was held on 28.11.2006 at Brussels, Belgium. Various areas discussed for cooperation were:

- (i) Capacity creation in resource assessment of CBM/CMM/AMM
- (ii) In-situ coal gasification.
- (iii) Coal beneficiation for coking and thermal coals
- (iv) Development of mining methods for steep and thick seam working.

The meeting of Indo-EU CWG to discuss Coal Conversion Technologies was held on 21.1.2008 in New Delhi, where power sector proposed areas of cooperation for improved efficiency in coal utilization for power generation. The 4th meeting of the Indo-EU CWG on clean coal technologies was held in Brussels during 17.6.2008. The areas identified for cooperation were Steep Seam mining, underground coal gasification and underground mine rescue. The 5th meeting of the Indo-EU Energy

Panel meeting was held on 6.10.2009 in Brussels. Subsequently the 5th meeting of the Indo-EU Working Group was held during 12-14 April, 2010 in Spain. The progress made by the working group on coal and clean coal technologies was reviewed and steps to improve the Indo-EU cooperation further were discussed. 6th meeting of the Indo-EU Coal Working Group was held on 11.5.2011 followed by a workshop on steep seam extraction and a visit to North-East region during 12-13, May, 2011 involving experts from Spain to explore the possibilities of exploiting steep seam in this region. The 6th meeting of the Indo-EU Energy Panel was held on 18.11.2011 in New Delhi which reviewed the working group's activities.

11.3 REPUBLIC OF SOUTH AFRICA

1. The Working Group on Coal with South Africa was constituted in 2003 and the first meeting of the Working was held in New Delhi on 29-30th July, 2008. At present Secretary, Ministry of Coal is Co-Chair and there are four members including Chairman, CIL and Director General Mines Safety.
2. The specific areas for cooperation identified by the Indian side includes mechanization of Board and Pillar System of underground mining, beneficiation of coal and technology of Conservation of Coal to Liquid (CTL). Some other new areas for cooperation were also identified during the last meeting held in July, 2008.
3. Some of the areas identified in the course of the meeting were mechanization of underground coal mining. Hard Roof Management techniques, development of Coal Bed Methane, underground coal gasification, identification of coal blocks, facilitation for forging Joint Ventures between CIL and BEE. Both sides agreed to continue exchange of information and dialogue for developing a road map for the South African coal sector.
4. As per the agreed decisions, the next meeting of the Coal Working Group was required to take place in South Africa on a mutually convenient date. MEA is pursuing the issue with South Africa side to firm up possible date(s) for hosting the next meeting of CWG in South Africa.

11.4

MOZAMBIQUE

Mozambique has been chosen by Coal India Limited (CIL), a public sector undertaking, as a preferred destination for securing coal properties abroad, both directly and through the newly formed Joint Venture Company – “International Coal Ventures Ltd” (ICVL) for its untapped metallurgical and high grade coal resources.

Government of India and Government of Mozambique are having a Joint Working Group on Coal. An MOU between Government of the Republic of India and the Government of the Republic of Mozambique on cooperation in the field of coal resources was concluded on 26.05.2006. First meeting of Indo-Mozambique Joint Working Group on Coal was held on 07.04.2007 in Maputo in Mozambique and the second Joint Working Group meeting on Coal was held on 30.03.2009 in New Delhi. In February 2009, Govt. of Mozambique have allocated two coal blocks at Tete Province to CIL.

In the 2nd Joint Working Group meeting on Coal, the leader of Mozambique delegation had expressed willingness to further expand cooperation on production sharing basis with Indian Public Sector Undertakings. The leader of Mozambique delegation was keen on the use of Mozambique share of coal in a pit head power plant, to be set up in that country.

Coal India Africana Limitada, a wholly owned subsidiary of Coal India Limited has been granted Prospecting Licenses

3450L and 3451L for coal by the Ministry of Mineral Resources, Govt. of Mozambique w.e.f. 06.08.2009 for a period of five years based on the winning Bid by CIL against tender no. 06/DNB/08 dated 18.12.2008. CIL/CMPDIL has initiated action for exploration and exploitation of these two blocks.

Setting up of APO and ATO in Mozambique

The consolidated proposal for human resources and capacity building for Africa under the USD 500 million grant-in-aid announced by Hon'ble Prime Minister at the India Africa Forum Summit-I in April, 2008 at New Delhi, includes setting up of an Apex Planning Organization (APO) and an Apex Training Organization (ATO) for coal sector in SADC region in Mozambique. Initially, Funding for the APO and ATO was to be out of Ministry of External Affairs (MEA) funds. MEA was to make direct funding to the implementing agencies and the administrative Ministries concerned would be kept informed in this regard. The implementing agencies would be required to sign two agreements – one with the host country and another with MEA for this purpose. However, as the Govt. of Mozambique is not willing to provide the cost of land and building, CIL has offered to bear this cost, as part of their commitment while obtaining Coal Blocks from the Govt. of Mozambique.

CIL/CMPDIL officials were in Mozambique in April, 2011 to work out the details with the Government of Mozambique for setting up of APO and ATO and CIL was asked to finalize the Memorandum of Understanding (MOU) with the Govt. of Mozambique for setting up of APO and ATO. The draft MOU prepared by CIL was vetted by Ministry of Coal and Ministry of External Affairs and returned to CIL for further necessary action in January, 2012. CIL is in the process of

finalizing the same in consultation with the Govt. of Mozambique.

11.5

JAPAN

- Clean Coal technology: The Japan Coal Energy Centre has been undertaking Clean Coal Technology Transfer Project on Coal preparation technology in India. Clean Coal Technology Transfer Project is implemented by J(COAL) under the support of Ministry of Economy, Trade and Industry (METI). J(COAL) commenced this Project in 1996. More than 100 Indian experts and managers were invited to Japan for CCT training in Japan by the end of FY 2010. In the financial year 2011, METI decided to continue the Project in the area of coal preparation technology to improve plant efficiency and reduce pollutant discharge in coal fired power plant in India.
- A Green Aid Plan is jointly being promoted by the Ministry of Economy, Trade & Industry of Japan and the Ministry of Finance, Govt. of India to support the self help efforts of India in resolving its energy and environment related difficulties. This is accomplished by demonstration of a Japanese coal washing technology that consists of a Vari-Wave jig system and an auto reject control system adjacent to the coal mine. The project is partially being funded by NEDO, Japan through METI.. M.s. Monnet Ispat Energy Limited has been identified for implementation of the project.
- An MOU has been signed between MoC, NEDO and Monnet Ispat & Energy Limited, India in this regard and the project is under implementation.

- Under the India-Japan Energy dialogue a Joint working Group on coal has been set up and following areas have seen proposed for technical cooperation:-
- (i) Development of integrated underground communications system,
- (ii) Instrumentation for monitoring of mine gases and fires,
- (iii) Detection of partings between adjoining water – logged unapproachable workings,
- (iv) Rescue equipment and operations,
- (v) Underground coal gasification,
- (vi) Utilization of coal sludge produced in washeries,
- (vii) Extension of CCT training programmes

11.6 RUSSIA

The 5th meeting of the Working Group on Mines & Metallurgy was held in Moscow on 8-9 October, 2009. The salient features of the meeting are:

- Indian side informed about interest of Indian companies in securing coking and thermal coal deposits in Russia as well as in securing access to frontline technologies in this area. Russian side requested Indian side to send specific information on volume demand and qualitative requirement of coal as well as interest of Indian investors in participating in coal projects in Russia.
- M/s. Zarubezhugol has expressed their interest to continue work on the Indian investments into the coal industry of Russia and also expressed their interest in export of non-coking and coking coal.
- Both sides noted the interest of the

Russian and Indian companies in cooperation and expansion in the coal industry and agreed to support prospective projects in this sphere.

- M/s. Zarubezhugol, M/s. Giproshakht and other Russian organizations have expressed interest in participation in tenders for performance of works on designing, building new and reconstruction of the operating coal enterprises, deliveries of the mountain-mine and mountain-transport equipment and spare parts.
- The Russian side requested Indian side to provide the updated expansion plan of Indian coal industry in order to give a definitive direction.
- Russian side conveyed that M/s Zarubezhugol and other Russian scientific and research institutions are ready to participate in the design works on a contract basis of Indian research and project institutes, working in sphere of the coal industry.
- Giproshakht and VNIMI have requested the Indian side to expedite the signing of Memorandum on Cooperation between Giproshakht and VNIMI with CMPDIL.
- The Working Group noted the readiness of Zarubezhugol and Giproshakht to train the Indian experts on a contract basis in the research and design institutes on modern technologies of designing of coal (underground and coal open-pit mining), designing and manufacture of the modern mountain-mine equipment, for acquaintance with modern technologies for both OC and OG mining.

Ministry of Coal forwarded a copy

of Protocol of the above meeting and the same was communicated to the subsidiary companies for sending ATR for transmission the same to MOC. The Action Taken Report was subsequently transmitted to this Ministry

11.7 BELARUS

Ministry of Coal and Chairman, Coal India Limited visited Belarus in the month of Jun, 2011 and requested them to participate in the tenders for supply of HEMM as and when invited by CIL. A note covering the current status of cooperation in coal sector between India and Belarus and proposed suggestions for further cooperation in coal sector likely to be discussed in 5th Session of India-Belarus Inter-Government Commission for Economic, Trade, Industrial Scientific, Technological & Cultural Cooperation is under consideration.

11.8 AUSTRALIA

7th meeting of India-Australia Joint Working Group (JWG) was held in Australia in May, 2011. The progress / status of all activities as per the earlier signed Joint Working Programme – Coal Action Plan for the year 2009-2011 were discussed and new Joint Work Programme – Coal Action Plan for the year 2012-2014 was signed during the JWG meeting. As far as coal sector is concerned, the main focus of the discussions were, Collaboration on coal mine safety issues including capacity building in the area and utilization of leading coal mining technologies like low emissions coal technology, underground coal mining, deep shaft sinking, underground coal gasification, ground water management, hydraulic mining, exploitation of thick coal seams etc. The second meeting of India Australia Coal Task Force (CTF), constituted under India Australia Joint Working Group, was also held on

12.12.2011 at New Delhi, where pending issues, such as work on draft MOU between CMPDIL and CSIRO, Australia were expedited. Both sides stressed on more exchange of ideas and to chart the road ahead for collaboration between the two countries, in the fields of energy and mineral resources.

11.9

GERMANY

The Joint Working Groups (International Cooperation) with US, Australia, Germany, Poland, Russia, Japan, Canada, Kazakhstan, China etc. are being operated in obtaining the relevant technologies & other strategical issues between India and the above countries.

The 18th meeting of the Indo-German Working Group on Coal was scheduled to be held during September 2011 at Essen Rhein and Ruhr area - Germany. The following issues related to NLC were sent as agenda for discussion

- Clean Coal Technology
- UCG of deep seated lignite deposits
- Method of bottom Ash Disposal in de-coaled area of working Mine.
- Application of Laser Technology in mining industry and blasting.
- Ground water management.

11.10 USA

The Indo –US Coal Working Group has been actively functioning since July, 2005 and several activities have been undertaken in different areas of interest. A few meetings of the Indo-US Coal Working Group (CWG) on Coal have also taken place and progress in respect of activities under Indo-US Coal Working Group is being reviewed from time to time in the Planning Commission as well as in Ministry of External Affairs. The last (7th) meeting of the Indo-US Coal

Working Group was held on 24.3.2011 in New Delhi, India.

The different areas of cooperation under Indo-US Coal working group include fine coal beneficiation, capacity building for skill development in the area of Geo Spatial Technology for mined out land reclamation in India, cooperation between Indian and US R & D labs. The ongoing R & D project for development of washery simulator flow sheet for Indian coal beneficiation which was taken up with US experts is nearing completion. Virginia Tech University have shown interest to offer the technology developed by them in setting up coal beneficiation plant of 75-100 tonne per hour capacity in BCCL and Southern Illinois University, Carbondale have shown interest in taking up the project for capacity building in remote sensing and Geo Spatial Mapping for the officials of CMPDIL/CIL. Other areas that were discussed for technical cooperation included underground coal gasification, coal mine methane and ventilation air methane etc.

11.11 MALAYSIA

Some of the upcoming projects in ECL in collaboration with Malaysia are:

- Kotadih Continuous Miner (capacity $0.51 + 0.09 = \text{MT}$)
- Bansra Continuous Miner (New Project).
- Haripur Continuous Miner (New Project) (estimated capacity $0.51+0.09=0.60 \text{ MT}$).
- Madhaipur Extension (Low Height CM), (Rangamati B) (New Project).

11.12 INDONASEA

An MoU between the Ministry of Coal and the Ministry of Energy & Mineral Resources of Govt. of Indonesia has been signed on 10.6.2010 on the

establishment of the Working Group to cooperate in areas such as promotion of trade and investment in the coal sector, enhancing understanding of coal related energy issues, promotion of exchange of information on policies, programmes, and technologies etc. The 2nd meeting of the India-Indonesia Joint Working Group meeting was held in New Delhi on 24/11/2011.

The following areas for cooperation were identified :-

- Capacity Building; Coal Resource Development; Clean Coal Technologies; Development of Coal Blocks; Trade and Investment
- As CIL was interested in association with Indonesian public sector coal company namely Bukit Asam for entering into coal mining in Indonesia, Indonesian side may explore whether any CCoW concession holders would be interested in JV with CIL and may facilitate negotiation for JV in existing operations or for green field areas.
- Central Institute for Mining and Fuel Research (CIMFR), India may identify areas of mutual interest for lab to lab cooperation between the two countries for undertaking R&D.
- Equipment manufacturing companies from India may associate themselves with the coal companies of Indonesia for widening their base;
- Indonesian coal companies may associate themselves with Central Mine Planning and Design Institute Ltd. (CMPDIL) of India for their requirements of coal exploration, prospecting and mine planning and design needs .

Further, an Energy forum between India

and Indonesia has been set up lead by Minister of Coal, Ministry of Coal, Ministry of Petroleum and Natural Gas, Ministry of Power, Ministry of Renewable energy and Ministry of External Affairs to be the representatives. The broad draft terms of reference of the Energy forum are as follows :-

- (1) To understand issues pertaining to energy and promote the exchange of information on policies, legal framework, programmes and technologies with special emphasis on exploration, research and development, technical cooperation, capacity building in different sub-sectors of energy
- (2) To enhance trade and investments in the energy sector
- (3) To identify other forms of cooperation mutually agreed upon by the parties

11.13 KAZAKHSTAN

CIL has informed that there is no significant actual performance in respect of International Co-operation that took place with Kazakhstan with CIL

during the year 2011-12.

11.14 MULTILATERAL COOPERATION

7th meeting of Coal Mining Task Force was held from 14-16 September, 2010 at Whistler, British Columbia, Canada. In the aforesaid meeting, Indian side presented statistics on coal industry and showed their interest in faster coal production and emphasized on clean coal technology through partnership with various countries. Flagship Activity Updates was made through Information Sharing on Coal Processing Technologies (India and US). Status of Indian project was informed under Task Force Project Updates. In this meeting following decision were taken :

1. CMTF meeting held on 14-16 September, 2010 was decided to be the last meeting of CMTF. The PIL decided to phase out CMTF at Bonn, Germany.

2. In the meeting, different projects that have been completed were noted and it was agreed to transfer some of the existing projects to be completed through other bilateral forum. It was noted that all on-going projects could be covered by the proposed changeover.