

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 INTERNATIONAL CO-OPERATION WITH 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. Second 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 coal.
- 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 has posed 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 in Brussels on 6.10.2009. The progress made by the working group on coal and cleans coal technologies and steps to improve the Indo-EU cooperation further were discussed.

11.3 REPUBLIC OF SOUTH AFRICA

A Working Group between India and South Africa was constituted in 2003 headed by Secretary, Ministry of Coal from Indian side and Director General (Coal & Mines) on South African side. The first meeting of the Working Group was held on 29th July, 2008 in New Delhi. South Africa has agreed to provide assistance to CIL. Certain areas have been identified for co-operation with South Africa including mechanization of underground mines, development of Coal Bed Methane, formation of joint venture by CIL with BEE companies etc. Both sides have agreed that India would assist South Africa in developing a road map for their coal sector.

11.4 MOZAMBIQUE

The Coal Working Group between India and Mozambique has been constituted and first meeting of this Group was held in Maputo in April, 2007. 2nd Meeting of the Group was held on 30th March 2009 in New Delhi. The Group reviewed the progress made in terms of the decision taken in the 1st meeting. India also offered to assist Mozambique in carrying out study of coal resources and preparing road map for development of coal sector including prospecting and exploration of coal blocks.

In February 2009, Govt. of Mozambique have granted concession for prospecting

and exploration of two coal blocks in Tete Province to CIL. CIL is taking necessary action for exploration and mining of these blocks.

Representatives of Ministry of Coal also participated in the 2nd Session of the Indo-Mozambique Joint Commission meeting held on 19th February 2009 in New Delhi.

11.5 CO-OPERATION WITH JAPAN

The Third Indo-Japan Energy Dialogue (IJED) was held in Tokyo on 17th September, 2008 between Shri Montek Singh Ahluwalia, Dy. Chairman, Planning Commission and Mr. Toshihiro Nikai, Minister, Ministry of Economy, Trade and Industry of Japan (METI). After the meeting both the Ministers signed a Joint Statement.

The two Ministers sought to promote technology transfer efforts to help reduce the ash content of coal used in India, including the implementation of a commercial scale model project for high efficiency coal preparation. The Ministers welcomed that the MoU concerning the Model Project for Highly Efficient Coal Preparation Technology would be signed by NEDO and its Indian counterpart. The Ministers agreed that the Working Group should discuss the possibility of developing a Feasibility Study on a similar project in other areas in the coal sector.

In order to improve the thermal efficiency of existing conventional coal-fired thermal power plants and reduce their environmental impact, both the Ministers welcomed the Japanese proposal to study the renovation of coal-fired power plants in India, such as by sending/deputing experts to examine the condition of several facilities, providing advice for possible modifications and holding seminars to promote the benefits of energy efficiency improvement.

Both the Ministers welcomed the training programme executed by NEDO that accepted a total of 51 Indian trainees between fiscal 2001 and 2008 for training regarding Clean Coal Technology transfer. They also welcomed that in fiscal 2009, NEDO will accept a total of 20 trainees in the fields of power generation and coal preparation.

The Meeting of Indo-Japan Working Group on Coal was held on 16.3.2009 at New Delhi. In the meeting CIL made a presentation before working Group seeking assistance in the following items:-

- Development of integrated underground communication system.
- Instrumentation for monitoring of mine gases, fires etc.
- Detection of partings between adjoining waterlogged unapproachable workings.

- Rescue equipment and operation.
- Coking Coal Beneficiation.

11.6 CO-OPERATION WITH 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:

- During the meeting 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. Giproskht 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 Zarubezhaugol 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.
- Giproskht and VNIMI have requested the Indian side to expedite the signing of Memorandum on Cooperation between Giproskht and VNIMI with CMPDIL.
- The Working Group noted the readiness of Zarubezhugol and Giproskht 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 has desired inputs on the following issues for the 3rd meeting of the Joint Task Force:

- Information exchange in the field of mining equipment production
- Metalurgy and mining - Russian experts keen providing consulting services to Indian steel, coal and energy companies.

- (2) Underground Coal Mining
- (3) Underground Coal Gasification
- (4) Coal to Liquid Technologies
- (5) CBM Technologies
- (6) Coal Washeries
- (7) Abandoned Coal mine Rehabilitation
- (8) Sustainable Mining Practices
- (9) Skilling, Training and Capacity Building.

11.7 CO-OPERATION WTH BELARUS

The 4th meeting of the India Belarus Inter Governmental Commission for Economic, Trade, Industrial, Scientific, Technical and Cultural Co-operation [hereafter "Commission"] was held in New Delhi on 17th & 18th November, 2008.

Both the sides negotiated and discussed the issues of cooperation on the basis of mutual and equal interest.

11.8 CO-OPERATION WITH AUSTRALIA

A meeting between the Australian minister Mr. Martin Ferguson, Minister for Resources, Energy ad Tourism and the then MOS for coal had took place on 05-11.2008 at New Delhi, where a document on "Joint Strategic Action Plan" on coal between India and Australia, was also signed. The key areas that this Action Plan will focus upon are :

- (1) Mining Technology Services



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The taskforce will operate for an initial period of two years and will report to the Joint Working Group (JWG)

Objectives

- To serve as a platform to strengthen policy dialogue and capacity building including overseeing the implementation of the Coal Action Plan work programme.
- Encourage policies that enhance the sustainable production, trade and consumption of coal thereby improving economic and social well being ;
- Foster regular exchange about experiences with regulations, policies and practices and about significant developments in each economy's coal mining sectors;
- Encourage research to develop and apply new coal exploration, extraction, and pollution control technologies that are cost effective, efficient, economically sound, environmentally responsible and socially acceptable. Promote information exchange and cooperation on such technologies; and
- Foster investment certainty in coal sector through the pursuit of open coal markets and the articulation of clear and predictable investment policies.

Scope of Activities

The 6th India-Australia Joint Working Group meeting was held on 16-17, March, 2009. A Work Programme, outlining the activities to be undertaken under the "Joint Strategic Action Plan" was further crystallized with time frame and signed

with objective of enhancing awareness of trade between India and Australia. It was also envisaged in the said action plan to establish a task force for speedy development of bilateral opportunities and continuity of all key areas, as enumerated in the Joint Action Plan. The activities of the task force also include proposing further networking meetings to promote opportunities in India, offering one to one appointments to participants with each other and mine visits, besides other networking functions. Task Force from Indian side has been constituted. However, confirmation from Australian side is awaited.

11.9. CO-OPERATION WITH GERMANY

The 17th Meeting of the Indo-German Working Group on Coal was held on 7th November, 2008 at Kolkata. In the meeting the following areas were identified to strengthen the working group cooperation efforts :

- (i) Joint Venture for mining abroad with technological cooperation from Germany.
- (ii) Cooperation in capacity building specially in underground mines.
- (iii) High pressure water jet technology for extinguishing mine fire and excavations.
- (iv) Exchange of expertise in coal mine safety, technology and equipment through training, seminar, workshop etc.
- (v) In seam seismic survey for underground coal mining operation.

- (vi) Technology for hard group management in coal mines.
- (vii) Establishing techniques to assess and extract Coal Bed Methane (CBM)/Coal Mine Methane (CMM) & underground Coal Gasification (UCG).
- (viii) 3D seismic survey with borehole imaging system.
- (ix) Developing technology, essential for deep shaft sinking for extraction of deep seated coal.
- (x) Ventilation Air Methane (VAM)-mitigation and utilization of Indian Mining Scenario. The 18th meeting of Indo-German Working Group on coal is proposed to be held on 20th April, 2010 in Munich.

11.10 Co-operation with USA

Consequent to the meeting between Deputy Chairman, Planning Commission and US Energy Secretary in 2005, a high level Indo-US Energy Dialogue was formed. Five Working Groups, including one on Coal, was constituted. Indo-US Working Group on Coal comprises of AS (Coal), as Co-Chair and other members. So far, four meetings of the Working Group have been held. First two meetings held discussions and identified areas of cooperation. Third meeting of Indo-US Working Group was held on 4th/5th April, 2006 in New Delhi. The following milestones have already been achieved:

- (a) Indian participation in Future Gen Project has been signed.

- (b) Grant agreement between USTDA and NLC for preparation of a feasibility report for Mine-III project of NLC was signed on 13.3.2006;

USA and India signed protocol agreement for establishing CBM/CMM Clearing House in India on 16.11.2006 in Washington D.C. Initially, Work Plan was signed during the 3rd Meeting, focusing on eight areas for cooperation. These were coal beneficiation, waste coal utilization, coal fine recovery, coal gasification, coal mine safety, overburden dump stability, coal bed methane/CMM/AMM and steep seam production enhancement. Further activities in these identified areas are being undertaken.

4th Indo-US Coal Working Group meeting was held on 5th/6th June, 2007 in Washington D.C., Following areas were identified for special and immediate need:-

- a) resource modeling and techno-economic evaluation of coal mine methane/abandoned mine methane projects, regulatory framework for safety in coal mine methane and CBM regulator and Highwall mining;
- b) discussions on the US Regulatory Framework for coal mining, underground coal gasification and coal bed/abandoned mine extraction.

Out of three R&D projects identified for cooperation, two projects have been finalized and submitted for taking approval for CIL, R&D Board. Third project viz. Beneficiation technology for Low Volatile Coking Coal from Jharia coalfields is getting finalized shortly. A meeting of Indo-US Coal Working Group meeting was held in May, 2008 at New Delhi which, inter-alia, reviewed the progress made in terms of earlier commitments and Action Plan. The next meeting is scheduled to be held in USA.

11.11 MULTILATERAL COOPERATION

India is one of the partner countries Under 7 countries Asia Pacific Partnership on

Clean Coal Development and Climate (APP). India is also the Co-Chair of Coal Mining Task Force (CMTF) created by Policy and Implementation Committee (PIC) of APP. Out of 18 projects identified initially for cooperation, India had proposed 7 projects. The 5th meeting of CMTF took place in Las Vegas, USA in September 2008, in which three more new projects were proposed by CIL. As Co-Chair of CMTF, representatives of Ministry of Coal companies have also participated in the PIC meeting of APP held in Seattle, USA (May, 2008) and Vancouver, Canada (October 2008).