

# Approach Paper on Coal Washing : Way Forward

**CPSI**

*is committed to a  
cleaner India through  
promotion of Coal Washing  
and making coal production  
& supply chain clean  
and environmentally  
acceptable.*



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**CPSI**

**Coal Preparation Society of India**

(Registered under Societies Act XXI of 1860)

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## International Conference on Coal Washing

16th - 17th April, 2015



Shri Anil Swarup, Secretary, Ministry of Coal lighting the Ceremonial Lamp



Shri Anil Swarup, Secretary (Coal) addressing the participants

## PREAMBLE

An international conference & exhibition on **Coal Washing in India - Emerging Business Opportunity: Priorities & Challenges** was held on 16th and 17th April 2015 under the aegis of CPSI. Some 250 delegates including subject experts from Australia, China, Poland, Germany, South Africa, Russia, UK and the USA participated in the conference. Some 30 high quality technical papers were presented and the deliberations during the two-day conference were very interactive, open and fruitful. All presentations, papers and articles were compiled in the form of a book titled Conference Proceedings which was distributed to every participant.

Some 32 large companies from India and abroad had set up 26 exhibition stalls in the exhibition, which was organized concurrent with the conference.

At the Concluding Session of the conference a gist of conclusions and recommendations was presented before an Eminent Panel of policy makers and industry experts who gave their valuable inputs and after further suggestions from the participants in to account and **Summary of Recommendations** were prepared and submitted to Shri Anil Swarup, Secretary, Ministry of Coal. Secretary (Coal) held a meeting with representative of CPSI on 29th April 2015 when the Summary of Recommendations was discussed and Secretary (Coal) had desired that CPSI should make specific suggestions for implementation of these recommendations.

In compliance with Secretary (Coal) s directions, an **Approach Paper on Coal Washing: Way Forward** has been prepared by a team of experts of CPSI and submitted to Ministry of Coal for appropriate action.

This document has been prepared for wider circulation among Corporate Members and industry colleagues in general.



**R K Sachdev**  
President



**Alok Perti**  
Chairman

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# APPROACH PAPER ON COAL WASHING : WAY FORWARD

## 1.0 Background

An international conference & exhibition on Coal Washing in India was held on 16th and 17th April 2015 under the aegis of CPSI. Summarized Conclusions & Recommendations emerged from two days of deliberations were presented to Secretary, Ministry of Coal. These were discussed in the meeting held with Secretary (Coal) on 29th April 2015. A copy of Conclusions & Recommendation is appended to this document (Appendix-A).

After discussions on each of the recommendations, Secretary (Coal) had asked CPSI team to suggest way forward as to how these recommendations and suggestions could be implemented by MOC / Coal India Ltd.

Accordingly, this **Approach Paper on Coal Washing: Way Forward** has been prepared by an Expert Team of CPSI after consultations among the industry members and subject experts.

For presentational purpose, suggestions for implementation of the recommendations document have been put under the following six headings:

- Coking coal for iron & steel industry.
- Thermal coal for power plants and other general consumers.
- Commercial issues.
- Disposal of coal washery rejects.
- Regulatory issues.
- General points.

## 2.0 Coking coal for iron & steel industry

- 2.1 All available Low Volatile Medium Coking (LVMC) coal should be washed by setting up new washeries. Old existing washeries in BCCL, CCL and SAIL should also be revamped/up graded so that all LVMC coal is supplied to steel plants after washing to get ash level of 16-18%.

- 2.2 If all such coal is washed import requirement of coking coal can be less by at least 10 million tonnes per year, that would amount to annual saving of about Rs. 9500 crore (USD 1.5 billion) in foreign exchange.
- 2.3 To implement the above suggestion, CIL, SAIL and TATA steel (and CIMFR) should work jointly on a time bound programme.
- 2.4 Action plan for increasing production of coking coal production from Jharia, East and West Bokaro and other coalfields should be prepared and implemented.

Details of the suggested **Action Plan** are given **annex-1**.

### 3.0 Thermal Coal

- a. With GCV based grading and pricing of thermal coal being in place, cost of washing can be factored in the price of coal and washing of coal should be taken up as an integral part of coal production and supply chain.
- b. Ash level of 34% should be made applicable to each coal consignment rather than making it applicable on quarterly basis, for the distance limit and other locations as prescribed by MoEF& CC.
- c. CIMFR and CMPDI should work in close co-operation in designing coal specific and cost effective flow sheets for new coal washeries of Coal India Ltd.
- d. Since thermal coal washing is generally a single stage washing process, it should be possible to design low CAPEX and low OPEX modular washeries which can be set up in 18-24 months, depending upon the size and ground conditions.
- e. **Dry Deshaling** should be adopted so that stones, shales and other extraneous material can be removed before subjecting coal to wet washing. This will result in significant reduction in the water requirement for coal washeries.
- f. Coal India Ltd must do away with the age old practice of **Wharf Wall Loading** and take immediate steps to set up well designed, proper and effective coal handling and coal washing facilities at all their mines.
- g. Wherever, possible coal washing facilities may be suitably dovetailed into the existing coal handling plants.

#### 4.0 Disposal of coal washery rejects

- a. Globally, coal washery rejects are considered nothing but rejects and are suitably buried along with overburden debris, back into the de-coaled areas as a part of land reclamation process.
- b. In India also washery rejects must be suitably disposed in an environment friendly manner.
- c. Heat content of washery rejects depends largely on the Near Gravity Material (NGM) & ash content in raw coal, method/ depth and technique of washing and the end use of clean coal etc.
- d. Industry experience has shown that there is always a chance of good coal being sold in the garb of rejects.
- e. Today washery rejects are in demand mainly on account of overall scarcity of coal for general consumers.

#### 5.0 Commercial issues

- a. Coal India should take steps to compress the timetable for inviting bids, evaluating tenders and award of work. It should be possible to do it within 3-4 months.
- b. Existing model of BOM has not been found to be effective for speeding up the process of setting up of coal washeries.
- c. Coal India Ltd may consider adopting more transparent, cost effective, and technically robust and internationally accepted **Pre-Engineered EPC** (Engineering, Procurement and Construction) model for setting up of coal washeries.
- d. CMPDI should prepare detailed flow-sheets, based on the quality of raw coal to be washed and all technical parameters as well the battery limits should be FROZEN before CIL or the Coal Company issues a tender for a coal washery.
- e. **Constructing Coal Washeries through Pre-engineered EPC route is recommended because it will be faster, efficient & more cost effective.**
- f. In order to increase competition and attracting more number of bidders, the prequalification criteria of washery construction tenders should be made broader so as to allow experienced EPC infrastructure companies to participate.

- g. Construction period of washery should be minimum 24 - 30 months according to the size and ground conditions.
- h. The security/performance bank guarantee should be limited to 10% of contract value as per the long standing prevailing practice of EPC contract so as to ensure the participation of renowned & reliable EPC contractors.
- i. Once construction is complete and a washery is handed over to the coal company by the EPC contractor, Operation & Maintenance (O & M) contractor can be assigned the task of operation of the washery for a minimum period of 10 years, extendable on suitable commercial terms.
- j. E-tendering should be adopted for making the entire tendering process transparent and fast. MCL has already initiated E tendering for coal washeries. Other coal companies may also adopt the same.
- k. Comparison of existing BOM and suggested EPC model for tendering for coal washeries is set out in **Annex 2 A**.
- l. Some suggestions on the existing BOM tender are given in **Annex 2 B**.

#### **6.0 Regulatory and policy related issues**

- a. Since all the washeries are to be designed and built on **Zero Discharge** concept, Ministry of Environment may formulate/prescribe standard norms & conditions on the basis of which environment clearance can be given without much delay.
- b. Where ever a coal washery is set up within the leasehold area of the coal company, MoC may ask MoEF&CC that Public Hearing should not be insisted upon. This will help in speeding up the process of environmental clearance.
- c. Disposal of washery rejects continues to a major road block in setting up of coal washeries in the country. MoC may examine all aspects of disposal/ utilisation of coal washery rejects and take a policy decision in this behalf.
- d. A number of coal washeries set up by private companies are reported to be underutilized due to non availability of raw coal and/or other issues. MoC may ask CMPDIL (or CIMFR) to undertake a survey of all such plants and evolve a mechanism so that these washeries can be effectively utilized.

- e. Government must at the earliest formulate a **Coal Washing Policy** that should encompass/address all issues and requirements relating to washing of coal including the issue of disposal of washery rejects.

#### 7.0 General points

- a. For expediting the environmental clearance for coal washeries, Coal India Ltd should make sincere efforts towards locating new washeries within their lease hold areas. This will also help in obviating many R & R related problems.
- b. CIL should take immediate steps to prepare an inventory of lands available/under their control, where washeries can be set up.
- c. In many mines washeries can be accommodated within the existing coal handling system by suitable adjustments and alterations.
- d. Blending of domestic coal of high ash content with superior imported coal is not an optimum solution to the issue of transporting coal of higher ash. Washing coal and improving its quality will reduce the need to import and lead to foreign exchange savings, if the power stations are resorting to blending only to bring the ash content below 34%. If import is for making up shortage then the two issues should not be confused.
- e. In those mines, where coal handling system does not exist, the washery and the coal handling system should be constructed together as a composite unit in order to save on cost and land requirement.
- f. Maintenance of coal washeries (and also coal handling plants) should be taken up seriously. Feasibility of giving long-term **Annual Maintenance Contracts** to competent vendors should be considered for better and effective utilization of coal processing infrastructure.
- g. With a large number of new washeries required to be established Coal India Ltd and its subsidiary companies should take up a dedicated **Skill Development** programme for training of engineers, operational & maintenance personnel in designing, operation and maintenance of coal washeries. CMPDI should work out suitable training programme jointly with Indian School of Mines, CIMFR, CPSI and other specialized agencies in India and abroad.

## Suggested Action Plan on Coking Coal

- 1.0. A quick look at coking coal production figures of BCCL and CCL for FY 2014-15 reveals the following position with regard to its utilization: (Source: SAIL)

	Total coking coal production (MT)	Fed to Washeries (MT)	LVMC Coal (MT) Supplied to power/others
BCCL	30.67	1.70 (*0.39)	28.97 [94 %]
CCL	19.81	5.74 (*1.65)	14.07 [71 %]
**CIL	50.48	7.44 (*2.04)	43.04 [85 %]

Quantity presently being fed to washeries is 7.44 MT, which is ~15 % of total production and the balance is going to power sector.

*\*Washed coal yield is 2.04MT, which is ~ 27% for CIL; BCCL – 23% and CCL – 29%. BCCL has 6 coking coal washeries of 10.03 MTPA capacity and CCL has 5 of 12.07 MTPA throughput capacity.*

*\*\*Note: Small quantity of production from other companies of CIL has been excluded.*

*Tata Steel's data for 2013-14: Total coking coal production 6.91 MT including 5.40 MT of LVMC coal. All this is being washed and used in their Steel Plant.*

*It must also be noted that unless new underground mines are developed/production from upper seams in existing mines is increased, almost entire 'coking coal' production from BCCL and CCL, in coming years would be of LVMC type.*

### 2.0. Demand of Coking Coal

- 2.1. Annual requirement of coking coal for SAIL plants is expected to increase from present level of about 16 MT/year to about 20 MT/year in next 2 years. Out of its total requirement, SAIL can use indigenous washed coking coal with ash content of ~ 16.50% up 40% of their total requirements. Thus, indigenous coking coal requirement is expected to increase from present level of about 6.5 MTPA to about 8 MTPA in next 2 years. Taking average clean coal yield of 25-27 % after washing, about 35 million tonnes of LVMC can be gainfully utilized, immediately, if CIL revamps/upgrades existing coking washeries and sets up new coking coal washeries.

- 2.2. Furthermore, **SAIL** is working on a growth plan to increase Hot Metal production capacity to about 50 MTPA by around 2030. Accordingly, annual coking coal requirement of SAIL plants is expected to increase to about 40 MTPA with indigenous Coking Coal about 16 MTPA, in a phased manner. It would, therefore, be imperative for CIL to augment availability of indigenous coking coal (prime, medium and LVMC), from Jharia, East and West Bokaro coalfields.
- 2.3. There is a positive development that BCCL and SAIL are exploring the possibility of forming a Joint Venture for revamping/modernization of existing coking coal washeries of BCCL, setting up new coking coal washeries and revival of coal washery at Durgapur Steel Plant (DSP). Both SAIL and CIL should speed up formalization of the proposed JV and start working on a Time Bound Action Plan to revamp the existing washeries and set up new washing capacity for processing at least 40 MTPA of LVMC coal. This plan when implemented will make ~ 11 MT washed coal for SAIL s steel plants.
- 2.4. CIL must take up and implement plans for increasing production of coking coal and work together with SAIL for revamping existing washeries and setting up of new washeries so that additional washed coking coal is supplied to SAIL plants.

**3.0. Accordingly, the following action plan may be considered by MOC / CIL for augmenting coking coal availability for steel plants**

- 3.1. Complete renovation of existing coking coal washeries of BCCL and CCL by replacing their circuits suitable to process LVMC coal for which they were not designed earlier. In any case almost all coking coal washeries have outlived their operative life and they need to up graded / replaced.
- 3.2. The land and infrastructure of these washeries available can be gainfully utilised for the purpose.
- 3.3. Time bound programme must be chalked out immediately. In 3 years time from now these 10 washeries can be made operative to wash LVMC coking coal if vigorous efforts are made.
- 3.4. Already three coking coal washeries of BCCL having total capacity of 11.6 MTPA at Madhuband, Patherdih-I, and Dahibari are in different stages of construction which need to be monitored on top priority at highest level so that they are put in operation by 2016-17.
- 3.5. Three more washeries at Bhojudih, Patherdih-II and Dugda having capacity of 7MTPA are in tender evaluation stage which must be put on fast track.

**Comparison between existing BOM model and proposed Pre-engineered EPC model of tendering**

Sl. No.	Salient Points	Build, Operate & Maintain (BOM)	Engineering, Procurement & Construction (EPC)	Benefits in EPC	Suggested solutions for incorporation in EPC format to cover O&M responsibilities
1.	Qualification Criteria	Available	Should be kept same		
2.	Selection of technology	Open ended	Should be frozen by CMPDIL before issuing tender as per practice followed in the past by CIL and in all global EPC tenders	<ol style="list-style-type: none"> <li>1. Easy &amp; faster to evaluate bids.</li> <li>2. Yield guarantee figures quoted by bidders become more rational since in deciding L1, the yield is the main criteria.</li> <li>3. Technology been frozen, environment clearance can be applied for prior to finalization of contract reducing gestation period.</li> <li>4. Since a basic layout is provided in EPC tenders, the land required is known &amp; on the basis of which land acquisition process can be finished by the time the contract gets awarded.</li> </ol>	

3.	Bank Guarantee	Successful bidder to give BG equivalent to 100% value of set up cost to get reduced @10% per annum after commercial operation starts	Successful bidder to give BG equivalent to 10% value of contract valid till successful commissioning & fulfillment of Performance Guarantee parameters & 10% value of contract price as Security Deposit valid till completion of setting up of the plant	<ol style="list-style-type: none"> <li>1. Renowned &amp; reliable EPC contractors both domestic &amp; foreign will refrain in the case of BOM to avoid blocking of their BG limit which for a single project can be in the range of INR 300 to 400 crores or even more being 100% of the project setting up cost.</li> <li>2. Will not only improve competition between reputed EPC contractors which under BOM is found to be limited to 2 or 3 but at the same time will help in bringing latest technologies through better technology partners from abroad too.</li> <li>3. Execution of the project through reputed EPC</li> </ol>	<ol style="list-style-type: none"> <li>1. BOM concept includes Operation &amp; Maintenance besides setting up of the plant while EPC contracts usually conclude with the setting up.</li> <li>2. Since qualification criteria for bidding remains same as BOM for EPC, the main bidder or his consortium partner(s) based on whose experience the bid gets qualified needs to still undertake the operation &amp; maintenance after successful commission &amp; meeting the performance parameters.</li> <li>3. The O&amp;M contract can be signed together with the main EPC contract or at a later date but before 6 months prior to completion at the price quoted during bidding stage for which a BG equivalent to O&amp;M price of 6 or 12 months is to be submitted with a mandatory</li> </ol>
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				contractors will be much faster with better workmanship.	renewal clause after every 6 or 12 months, as the case may be for the next 10 years. 4. Price Evaluation can still be on the basis of setting up price taking guaranteed yield figures into consideration. In this case yield figures of bidders are expected to be more rational with neck to neck difference as process technology is frozen by CMPDIL. For O&M the price quoted by bidders shall be given due weightage and here also process technology been frozen, the difference in O&M price between bidders is expected to be marginal. Still if O&M price is higher of the bidder whose setting up cost is lowest after taking the yield in consideration then as per present evaluation process for BOM , the cost for 10years O&M
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					shall be computed and added to the setting up cost and overall L1 bidder can be determined taking setting up & O&M cost together. It is observed that higher yield figures projected decides the L1 price offsetting even if the same bidder has given higher setting up cost which gets avoided with frozen flow sheet as given in EPC tenders.
4.	Execution of contract	Quoted completion time	Can be same by the EPC bidder	<ol style="list-style-type: none"> <li>1. Being pre- engineered, the approval process of drawings, equipment will be much easier, less complicated &amp; reduce risks in granting approvals at the working level of CIL subsidiaries.</li> <li>2. In comparison to BOM easier to monitor progress of work.</li> </ol>	

**Clauses in Standard Bid Document which need amendment**

Sl. No.	Clauses Description	Present Status	Proposal
1	<b>Validity of terms of Bid and time schedule of the bid evaluation and construction</b>	Validity of term of bid is 18 months from date of opening of Bid which includes environmental clearance or and above the period mentioned the validity of the bid is to be kept for construction period which amount to 18+18=36months	<ol style="list-style-type: none"> <li>1. The Bid evaluation time from the date of opening of technical/commercial bid should be restricted to three (3) months.</li> <li>2. E-bidding should be introduced for all the projects as initiated by MCL.</li> <li>3. The basis of applying for the environmental/ other statutory clearances should be on standard flow sheet which should be developed by CMPDIL who have in depth knowledge of coal characteristics and demarcation of land etc. in the present system, which forms the part of Bid document at present.</li> </ol>
1	<b>Development guarantee/Project financial security</b>	At present the vendor has to give Project Financial security in the shape of Bank guarantee for the construction period which is to be transformed into performance guarantee amounting to cost of total contract price. Earlier it was only 10% of the contract value. Many Indian/oversees Bidders do not participate in the tendering process for this clause in the bid document.	The amount of Project Finance Security in the shape of BG should be restricted to 10% only and if required Bidder may be asked to give corporate guarantee for the rest of amount. For wider participation in tenders BG should be restricted to 10% only.

3.	<b>Period of construction of washery</b>	At present it is 18 months including PG test after signing of contract & after handing over of land free from all encumbrances.	The period of construction of washery should be 24 months instead of 18 months keeping in view the ground reality.
4.	<b>Approved vendor list</b>	In the present bid document the vendor list is provided by CIL for the reasons not known	Vendor should be allowed to purchase the equipment from any domestic/international manufacturer to suit the required specifications. IL may ask the credentials of each and every equipment supplier from which bidder purchase the equipment. The onus of purchase is on the bidder who has to operate the washery also for ten years and stand guarantee for performance
5.	<b>Commercial</b>	Doubts/questions have been raised by commercial people during the execution taking the advantage of different clauses to pay even less than the contract price which is absurd and reverted by bidders.	Commercial clauses as defined in the bid document need to be more specific and clear so as to make decision making easier during execution of the project. Stipulations should be such that the bidder should get the bid price and change in taxes, if any, during the period in between submission of the bid and commissioning of the project. Any delay not attributable to Bidder should be compensated financially to bidders.

## **International Conference on Coal Washing in India**

(16th - 17th April, 2015)

### **Conclusions and Recommendations**

An international conference & exhibition was held on 16th and 17th April 2015 under the aegis of CPSI. Brief highlights of this event are as follows:

1. Event was inaugurated by Shri P K Lahiri - IAS (Retd.), Former Secretary, Revenue to Government of India and Former Chairman GC and Executive Board Indian School of Mines.
2. Shri Anil Swarup, Secretary (Coal); Shri Ashok Lavasa, Secretary (Environment, Forest & Climate Change); Shri Alok Perti - IAS (Retd.), Former Secretary (Coal); Shri S S Mohanty, Director (Technical), SAIL; Shri Sandeep Jajodia, Chairman & MD, Monnet Ispat & Energy and Shri R K Sachdev, President, CPSI addressed the participants in the inaugural session.
3. Some 250 delegates including over a dozen subjects experts from abroad participated in the conference.
4. Overseas subject experts and delegates from countries like Australia, China, Poland, Germany, South Africa, Russia, UK and USA participated in the conference.
5. Over 30 high quality technical papers were presented and the deliberations were very interactive and open. All these presentations/papers have been compiled in the form of a book titled Conference Proceedings which was released by the Chief Guest and other Guests present at the dais during the Inaugural Session of the Conference.
6. Dr. Thongi Gouricharan a well-known coal preparation expert from CIMFR, Digwadih, Dhanbad was awarded **Coal Processing Innovation Award 2014** by the Chief Guest at the opening session of the conference. Dr. Gouricharan was bestowed with the award for his innovative work of development of a flow sheet for processing of Low Volatile Medium Coking Coals of Jharia Coalfield. This flow sheet was tested on bulk quantity of coals and clean coal generated at different ash levels. Characterization tests at RDCIS, Ranchi proved that these coals are having good metallurgical properties. A patent on the process flow sheet is being filed. This flow sheet can significantly help in washing and utilization of LVMC coal from Jharia coalfield in the steel plants thereby reducing dependence on imported coking coal.

7. Conference was supported by the Ministries of Coal, Power, Renewable & New Energy and Environment, Forest & Climate Change.
8. Some 17 major companies including Coal India Ltd., NLC, NTPC, NMDC, GT Global (USA), Magnetic Resources Australia and others etc extended sponsorship support for the conference.
9. Some 32 large companies from India and abroad had set up 26 exhibition stalls in the exhibition, which was organized concurrent with the conference.
10. During the Concluding Session on 17th April 2015, a Gist of Proceedings was presented before eminent Panelists who gave their valuable inputs and further suggestions from the participants were also taken in to account while finalizing the **Summary of Recommendations** of this conference, which is given herein after.

### **Summary of Recommendations**

Summarized Recommendations are presented below:

#### **1.0 Coking in Coal**

- a. Presently, about 50 million tonnes of coking coal of low volatile medium coking type is being supplied to power station boilers. This is a very sub optimal use of this precious resource. Tests carried out by CIMFR, SAIL and CMPDI have established that these coals are very much suitable, after washing, for blending in steel plants thereby reducing the import requirement of coking coal by at least 10 million tons every year.
- b. CIL, SAIL, TATA steel and CIMFR should work jointly on design of coal specific flow sheets for setting up of new washeries to process these coals for steel industry.
- c. Similar joint initiative is required for setting up of new washeries for washing LVMC Coal.
- d. Existing washeries of BCCL, CCL and WCL (and also of SAIL) which have outlived their useful life so should be revamped or replaced, depending on their existing condition, instead of operating them at very low utilization efficiency.
- e. BCCL and CCL with the help of CMPDI should work towards production of more coking coal from deeper horizons in Jharia, East and West Bokaro and other coalfields where coking and /or medium coking potential exists.

## 2.0 Thermal Coal

- a. Whether To wash or not wash thermal coal should no more be debated.
- b. GCV grading and pricing system is a big driver to wash all thermal coals at the pit head.
- c. This should be incorporated in the Government policy of coal washing so that it becomes an integral part of the coal production and supply chain.
- d. Ash level of 34% may continue for the present, but it should be lowered progressively depending upon quality of raw coal and consumer s specific requirement. Furthermore, ash level of 34% should be made applicable to each coal consignment rather than making it applicable on quarterly basis, for the distance limit and other locations as prescribed by MoEF& CC.
- e. CIMFR and CMPDI should work in close co-operation in designing/ formulating coal specific and cost effective flow sheets for new coal washeries of coal India.
- f. Since thermal coal washing is a single stage washing, it should be possible to design low CAPEX and low OPEX modular washeries which can be set up in short time like 18 24 months.
- g. Wherever required, depending on the quality of coal, dry deshaling should be adopted so that stones and shales can be removed before subjecting coal to wet washing this will help in reducing the water requirement for coal washeries.
- h. Blending of domestic coal of high ash content with superior imported coal is not a solution to the issue of transporting coal of higher ash. Using coal of less than 34% ash is not the objective. The objective of limiting the distance over which high ash coal should not be transport is linked to costs and other environmental issue. Moreover, the cost of establishing appropriate blending machines is high and is perhaps more than the cost of washing. Further washing coal and improving it s quality will reduce the need to import and lead foreign exchange saving if the power stations are resorting to blending only to bring the ash content below 34%. If import is for making up shortage then the two issues should not be confused.
- i. Coal India Ltd must dispense with age old and unscientific practice of Wharf Wall Loading and take immediate steps to set up well designed, proper and effective coal handling facilities at all their mines. This will also eliminate dilution of quality of coal that happens due to mixing of extraneous materials during loading through wharf walls.
- j. Coal washing facilities can be suitably dovetailed in the coal handling plants (even exiting one) thereby reducing, if not totally eliminating the requirement of additional land and so many related problems.

- k. Maintenance of coal washeries (and also coal handling plants) should be taken up seriously. Feasibility of giving long term Annual Maintenance Contracts to competent vendors should be considered for better and effective utilization of coal processing infrastructure.
- l. Washery Rejects: Globally, coal washery rejects are considered nothing but rejects, and are suitably buried along with overburden debris back into the de-coaled areas as a part of land reclamation process. In India, however, there are different opinions about coal washery rejects:
  - i. Some washery operators consider the washery rejects have a commercial value as these contain carbonaceous matter, and they be allowed to sell these rejects for burning in FBC boilers or for any other usage, without requiring any prior permission from the Coal Controller s office / any other agency.
  - ii. Industry experience has shown that there is always a chance of good coal being sold in the garb of rejects.
  - iii. Unless the rejects are suitably disposed and are not allowed to be piled up into tall heaps, they are liable to catch fire due to spontaneous heating.
  - iv. In some cases thermal coal is being washed into three products namely clean coal with ash content > 25% for sponge iron manufacturing, middlings with 38-42% ash content for power generation through FBC technology and rejects with heat value of below ~ 800-900 Kilo cal/kg are dumped back into mines from where coal has been removed. Such instance are, however, not many in the country.
  - v. Today washery rejects are in demand mainly on account of overall coal shortage.
  - vi. Some experts including some of CIL subsidiary companies have expressed opinion that use of rejects for power generation by FBC route besides heavy investment, require sizeable area of land and lot water which are already in short supply in many coalfields. Over and above it further adds to the problem of handling ash from such FBC power plants. In order to obviate these problems it is recommended that a policy be formulated for disposal of washery rejects.

### **3.0. Regulatory and commercial**

- a) For expediting the environmental clearance for coal washeries coal India should make sincere efforts towards locating new washeries within their lease hold areas. This will help in obviating R & R problems.

- b) CIL should take immediate steps to prepare an inventory of lands available/under their control, where washeries can be set up.
- c) In many mines washeries can be accommodated within the existing coal handling system by suitable adjustments and alterations.
- d) Ministry of Environment should work out a standard set of conditions for setting of coal washeries which are environment compliant. Since all the washeries are designed on zero discharge concept there should be no difficulty in formulating such standard conditions on the basis of which environment clearance can be given without any delay.
- e) Wherever, washeries are set up in coal companies leasehold area, MoEF & CC may consider waiving the requirement of public hearing .
- f) Coal India should prepare standard tender conditions for new washeries and put it up on their website for general information for all prospective bidders.
- g) In order to increase competition and bring in more number of bidders, the prequalification criteria of washery construction tenders should be made broader so as to allow experienced EPC infrastructure companies to participate.
- h) Coal India should take steps to compress the timetable for inviting bids, evaluating tenders and award of work. It should be possible to do it within 3 4 months.
- i) Existing model of BOM has not been found to be effective for speeding up the process of setting up of coal washeries. Therefore, Coal India Ltd should consider reviewing different MODELS for setting up of coal washeries and work out more transparent, cost effective and technically sound model.
- j) Construction period of washery should be minimum 24 30 months in line with the ground reality.
- k) The security/performance bank guarantee should be limited to 10% of contract value as per the long standing prevailing practice of EPC contract so as to ensure the participation of renowned & reliable EPC contractors.
- l) E-tendering should be adopted for making the entire tendering process transparent and fast.
- m) In view of the above mentioned points, the Government must at the earliest formulate a **Coal Washing Policy** that should encompass/address all issues and requirements relating to washing of coal including the issue of disposal of washery rejects.

## International Conference on Coal Washing

16th - 17th April, 2015



Conference Proceedings released by the Chief Guest Shri P K Lahiri IAS (Retd.), Former Secretary to Government of India and Former Chairman, G C and Executive Board, Indian School of Mines



Shri Alok Perti IAS (Retd), Former Secretary (Coal) addressing the participants

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