

## Chapter 4 - Valuation of Coal Mines

The methodology of valuation of coal mines had been under consideration of Ministry of Coal (MOC) for some time. Prior to the de-allocation of 204 coal blocks by the Hon'ble Supreme Court in 2014, 'auction by competitive bidding of coal mines rules, 2012' was notified in February 2012 by MOC. Thereafter, MOC engaged (May 2012) M/s CRISIL Infrastructure Advisory (CRISIL) as consultant through Central Mine Planning and Design Institute Limited (CMPDIL), to formulate the methodology for calculation of floor and reserve price under these rules. Based on the suggestions of CRISIL, MOC prescribed (November 2013) a methodology for calculating intrinsic value of the mine by computing its net present value (NPV) (based on discounted cash flow method). The final NPV (after subtracting 10 *per cent* intrinsic value as upfront payment) was then proposed to be annuitised to become equal to a unit rate (₹ per tonne). The methodology also prescribed that average of imported coal prices for last five years (Indonesia, Australia) were to be used for calculation of intrinsic value. These were prescribed as in the scenario of shortage in coal production by Coal India Limited (CIL), the only realistic option for end use companies was to either import coal or use coal from overseas coal mines that those companies had acquired and therefore, were willing to pay international price of coal.

Thereafter, MOC prescribed a methodology for fixing floor price and reserve price for coal mines proposed to be auctioned/allotted. The methodology was based on the recommendations of an Inter Ministerial Committee (IMC), which changed the aspect of international price to CIL notified price from the earlier prescribed methodology. The committee stated that taking international prices might serve as an incentive for people to go for linkage rather than mining and might also have a long term implication for cost competitiveness vis-à-vis other countries. The pricing methodology was approved by the Cabinet Committee on Economic Affairs (CCEA) on 24 December 2014.

Audit examined the valuation carried out by CMPDIL and the results are discussed in the following paras:

### 4.1 Computation of Intrinsic Value by CMPDIL

Computation of intrinsic value of coal mines based on NPV required projections of cash flows, which in turn was dependent upon projections of revenue and costs (capital and revenue) associated with functioning of the concerned coal mine. CMPDIL carried out the

computation with capital costs including cost of land, buildings, plant and machinery, furniture and fittings, vehicles, development cost, etc. and revenue costs including cost incurred towards salaries and wages, stores, annual mine closure, power, etc. Revenue was measured by sale prices of coal as notified by CIL.

CMPDIL engaged CRISIL for suggesting ways for determining intrinsic value of coal mines. In addition, certain assumptions<sup>9</sup> were made for estimating cash flows. The basis of taking these assumptions included practices followed by CMPDIL for estimation of cash flows for preparation of project reports of subsidiaries of CIL and recommendations of CRISIL.

Audit examined the records relating to computation of intrinsic value of 29 coal mines by CMPDIL. Issues noticed by Audit, *inter alia*, included instances of inconsistencies and inaccuracies in following certain assumptions, errors in consideration of aspects of revenue and costs. Details of the observations on the above deficiencies, reply of MOC and CMPDIL and audit comments thereon are contained in **Annexure II**. Summary of the issues noticed are as follows:

**Table 3 : Summary of Issues Noticed by Audit Relating to Valuation by CMPDIL**

Nature of deficiency	Deficiency noticed in number of Coal mines	Impact of the deficiency on number of Coal mines	
		As under valuation	As over valuation
Deficiencies in consideration of grade of coal	Four	Three	One
Deficiencies in consideration of mine closure costs	Twenty Four	Twenty	Four
Consideration of lower rates of crushing charges	Six	Six	-
Deficiencies in consideration of cost of land	Five	Two	Three
Consideration of cost of heavy earth moving machines in opencast mines	Three	Three	-
Incomplete treatment of indirect taxes and levies	All	All	-
Deficiencies in consideration of cost of manpower	Two	-	Two
Inconsistencies in implementation of adopted assumptions and deviation from mine plans	Five	One	Four
Consideration of incorrect cost	Two	One	One

Analysis of the above table revealed that each of the individual deficiency noticed by Audit

<sup>9</sup> Consideration of discounted cash flow (DCF) at the rate of 10 per cent, project life or 25 years, whichever is lower, equity and loan component of capital in ratio of 80:20, royalty at the rate of 14 per cent, income tax at the rate of 33.99 per cent etc.

had an impact in the form of under valuation or over valuation in respect of a particular coal mine. Audit noticed that all these deficiencies cumulatively resulted in under valuation of 15 coal mines. For the remaining 14 coal mines, the intrinsic value was in negative or the floor price was less than ₹150 per tonne (in case of non-regulated sector coal mines) and therefore, there was no cumulative impact on the calculation of intrinsic value of these coal mines as a result of these deficiencies.

Calculation of the intrinsic value was an important stage of the whole e-auction process as the extent of upfront amount payable by the successful bidders, the floor price from which the bidding was to start for the non-regulated sector coal mines and the revised fixed rate payable for coal used for generation of power to be sold on merchant basis were derived from the intrinsic value only. In this context, Audit attempted to carry out a revised calculation of intrinsic value by incorporating revised elements of cost and revenue after considering all the deficiencies together in individual coal mines. Net impact of all the observations (including that of Para 4.2 below) on 15 out of the 29 coal mines (details in **Annexure-III**) was:

- Under valuation of 15 coal mines, which resulted in under determination of upfront amount by ₹381.83 crore (41 *per cent* of the total upfront amount of ₹932.44 crore).
- In six non-regulated sector coal mines, floor prices were under determined by amounts ranging between ₹4.70 per tonne and ₹1264.44 per tonne.
- In all the nine power sector coal mines, revised fixed rates (price for coal used for power produced for sale on merchant basis) were under determined by amounts ranging between ₹32.28 per tonne and ₹142.57 per tonne.

Audit noticed that the detailed calculations for NPV and intrinsic value of the coal mines were carried out by CMPDIL using their valuation model in MS Excel. Audit requested CMPDIL to provide the valuation model so as to calculate the impact of these audit observations using the same model. However, CMPDIL did not furnish the same and furnished only the final MS Excel sheets covering details of various elements of costs and revenue and the final result. CMPDIL stated that it did not have a standardised/proved valuation model with formulae for valuation of coal mine. Therefore, Audit attempted to re-calculate the NPV of the coal mines within the same Excel sheets for each of the coal mine, revising the relevant factors. Thereafter, the revised calculations were forwarded to CMPDIL for confirmation. However, CMPDIL stated that they could neither confirm nor refute the calculations made by Audit.

MOC in its reply (March 2016) and during the exit conference (March 2016) stated that:

- Fifteen cases of over valuation had been identified by Audit. As cases of over valuation would lead to higher upfront amount and consequently larger revenue realisation, Ministry refrains from commenting on its accuracy. CCEA approved methodology mandated that for the non-regulated sector the floor price should be a minimum of ₹150 per tonne notwithstanding the intrinsic value, which meant that for coal mines where the intrinsic value was negative or less than ₹150 per tonne the floor price should be fixed at ₹150 per tonne. Several cases noted by Audit were of that category.
- There was no information asymmetry for the bidders affecting the fairness and transparency of the e-auction process. Even if there was any inadvertent omission resulting in the valuation on the lower side (though it really was not), it would be taken care of by the bidding itself. Those mines had received bids in multiples of the floor price. Similarly, even if the upfront amount was “lower”, it would get factored in the bidding and its initial valuation would not result in any loss to the state exchequer.

MOC’s reply needs to be viewed in light of the following:

- As per the methodology for fixing floor/reserve price, intrinsic value of the coal mine was to be calculated by computing its NPV. The audit analysis was on the fact whether all the relevant assumptions and aspects of revenue and costs were correctly taken into consideration for calculation of the intrinsic value of the coal mines irrespective of the fact whether the resultant intrinsic value was negative or less/more than ₹150 per tonne (in case of non-regulated sector coal mines) or ₹100 per tonne (in case of power sector coal mines). As already explained above, the impact as over valuation/under valuation in table 3 was for individual deficiencies only. The net impact of all those components in individual mines was under valuation of 15 coal mines.
- Upfront amount was to be calculated as 10 *per cent* of the intrinsic value. It was independent of the final bid amount and was to be paid subsequent to signing of the agreement, irrespective of the operationalisation of mines. Thus, it was fixed by the Government and the receipt of which was certain at the initial stage itself. However, MOC’s reply reflected that the onus of correction of errors in the calculation and resultant under valuation, which was controllable, was left on the bidding process, which was outside its control and the result of which was uncertain.

- Calculation of floor prices/additional reserve prices reflected Government's perception of the fair value of the coal mines. Bidding process and the resultant bids received reflected the perception of the bidders regarding fair value of those mines. Both these perceptions would have had an impact on the bidding process. Moreover, the calculation of floor prices/additional reserve prices was controllable by the Government and errors in their calculation should not have been left for correction in the bidding process, which was outside its control and the result of which was uncertain.

**Inconsistencies and inaccuracies in following some of the assumptions and various errors in computation of intrinsic values resulted in under determination of upfront amounts in 15 coal mines, under determination of floor prices in six non-regulated sector coal mines and revised fixed rates in all nine power sector coal mines.**

#### 4.2 Valuation of Coking Coal Mine

Intrinsic valuation implies calculation of inherent value of the underlying asset. For calculation of true inherent value of any underlying asset, it was important that its individual characteristics were factored in. This was also inherent in the CCEA approved methodology's provision for taking notified price of relevant grade of coal. CMPDIL implemented the same by taking necessary data and information from the mine dossiers submitted by prior allottees for computation of intrinsic value of coal mines.

Audit noticed that the coal mines auctioned in the two tranches also included coal mine having coking<sup>10</sup> coal reserves. Out of the 29 successfully auctioned coal mines, one i.e. Moitra mine, of non-regulated sector, had 97 *per cent* coking coal out of its total coal reserves. It was noticed that the mine had been explored by Geological Survey of India (GSI) and CMPDIL. As per their estimation, the mine had geological reserves of 215.78 million tonne (121.93 million tonne of proved reserves), out of which 203.15 million tonne reserves were of coking coal. The mining plan of the mine, however, depicted the geological reserves and extractable reserves as 38.16 million tonne (37.01 million tonne of coking coal) and 29.91 million tonne (29.01 million tonne of coking coal) respectively, considering opencast mining upto a depth of 215 meter. Audit noticed that, the information for reserves up to 215 meter depth was used for classification and valuation of Moitra coal mine.

<sup>10</sup> Coking coal, when heated in the absence of air, form coherent beads, free from volatiles, with strong and porous mass, called coke. These have coking properties, mainly used in steel making and metallurgical industries and also used for hard coke manufacturing.

Due to the presence of coking coal, the mine plan also envisaged installation of coal washery for production of clean coal for supply to steel plant. As per the mine plan, the clean coal was to be produced at a yield rate of 40 *per cent* and rest was to be treated as ‘middling and rejects’ which was to be used in power houses. Audit noticed that the CCEA approved methodology laid down broad guidelines for calculation of intrinsic value by computing its net present value taking CIL notified prices. CIL notified prices did not provide for price of washed coking coal. However, CIL’s subsidiary companies were selling washed coking coal at different and higher prices than the notified price of raw coking coal. Moitra was the only coking coal mine auctioned in the two tranches and MOC approved mine plan provided for establishment of washery, washing of coking coal for the mine and production of clean coal, middling and rejects.

However, CMPDIL did not consider price of washed coking coal, middling, slurry and rejects<sup>11</sup> for valuation of Moitra coal mine. It also did not consider the capital cost of washery and related expenditure. Audit calculated the intrinsic value of Moitra coal mine, taking value of washed coking coal, cost of installation of washery and other related operating costs. Audit considered price of washed coking coal at which it was sold by subsidiaries of CIL to public sector undertakings (PSUs). This analysis indicated that the mine was under valued, which had an effect of under determination of upfront amount by ₹101.24 crore and under determination of floor price by ₹1264.44 per tonne.

CMPDIL and MOC, in their replies (March 2016) and during the Exit Conference (March 2016) stated that:

- The valuation of the mine was done as per the methodology for fixing floor/reserve price approved by the CCEA, which was based on the criteria of specified end uses and not on the grade of coal. The extant notified price of CIL for the non-regulated sectors for the corresponding gross calorific value (GCV) bands was to be taken into account for computing NPV.
- There was no statutory provision for calculation of intrinsic value or NPV of a coal mine. The mining plan did not have any provision for valuation of the mine. Neither the Order nor the Ordinance speaks about washery, or the negotiated price. As per the Act, washeries were clearly not part of mine infrastructure. Therefore, it would not be

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<sup>11</sup> Price of washed coking coal has been taken @ ₹5871.15/tonne at 17 *per cent* ash as per Memorandum of Understanding between Central Coalfields Limited (CCL) and Steel Authority of India Limited. Further, the prices of middlings, slurry and rejects have been taken @ ₹2858.93, ₹2248 and ₹1257 per tonne respectively as per the rates prescribed for coking coal washeries of CCL vide notification dated 16 April 2012.

appropriate to consider coal washeries or washed coal. Audit had taken the negotiated price of washed coking coal for valuation of the mine and CMPDIL was not given any mandate for that.

- As per mining plans, there were ten mines with washery provisions, but only one mine (Moitra) was considered in the draft report for valuation with washery. If washeries should have been considered in calculation of intrinsic values, in all such ten coal mines, intrinsic value should have been calculated. The combined intrinsic values calculated on the basis of the notified CIL price would be less than the one calculated by CMPDIL earlier.
- In view of the explicit provision in the Colliery Control Rules, 2004 that coal included coking coal, such a distinction could also not have been made by the Ministry/CMPDIL.

MOC also stated that the matter was referred to the Ld. Attorney General (AG) for obtaining his opinion on the issue. While quoting the opinion of the Ld. AG, MOC, *inter alia*, stated that decisions taken by the Cabinet constituted fundamental policy directives for implementation by the Ministries and it was bound to follow the decision of the CCEA.

MOC's reply needs to be viewed in light of the following:

- Though there was no specific provision for calculation of intrinsic value or NPV of a coal mine, MOC had taken CCEA's approval for the methodology. Audit has commented on the issues observed in implementation of the CCEA approved methodology.
- The methodology approved by the CCEA prescribed calculation of intrinsic value of the mine by computing its NPV, based on discounted cash flow method. Intrinsic value calculation implies calculation of inherent value of the underlying asset and for that purpose, it was important that the basic characteristics of the underlying assets were considered. The mine dossier including mine plan for each individual coal mine contained specific details of that particular mine including area, total reserves, grade-wise reserves, annual target and mine life, assets among others. Accordingly, the valuation methodology was implemented by carrying out valuation of each coal mine on the basis of the details provided in the mine dossier by CMPDIL.
- CIL did not notify the prices of washed coking coal. However, CIL's subsidiaries were selling washed coking coal at a much higher price than notified price of raw coking coal.
- Moitra was the only coal mine put up for auction having coking coal reserves (97 per cent of its total coal reserves). It contained washery grade coking coal, which was to be

supplied to steel plant(s) mainly for steel production. This was confirmed from the fact that all the bidders for this mine had mainly steel plants as the specified end use plants (SEUPs). Further, washery grade coal is to be washed in a washery for use in a steel plant. Therefore, washed coal should have been considered for valuation of the coking coal mine. Scrutiny of the mine plans of the mines referred by MOC revealed that provision for washery was there in six mines (excluding Moitra coal mine). Further, MOC's another contention that combined intrinsic values calculated *on the basis of the notified CIL price* will be lesser after considering washeries for non-coking coal mines may be viewed in light of the fact that CIL did not notify prices for washed non-coking coal also and details of calculation carried out were not provided to Audit. Considering prices of the washed non-coking coal (along with slurry and rejects) on which it was sold by subsidiary of CIL, the impact on intrinsic value was higher in two mines, lesser in one mine and there was no impact on three mines.

- Moitra had 97 per cent coking coal out of its total coal reserves and there was a provision for installation of washery in the approved mine plan, clearly showing that coking coal produced from the mine was to be washed. Hence, the price of washed coking coal should have been considered for calculation of the intrinsic value.
- Though washery was not specifically covered under the definition of mine infrastructure, but it was noticed in Audit that there were various types of assets including movable and intangible assets which were also not covered under the definition of Mine Infrastructure given under section 3 (j) of the Act, which were taken into consideration for calculation of intrinsic value of the coal mines by CMPDIL.

**Moitra coal mine contained washery grade coking coal, which was to be washed before utilisation in the SEUP. Approved mine plan for this mine also contained provision for installation of washery for washing of coking coal produced. However, this aspect of washing of coking coal was not considered during calculation of intrinsic value. CMPDIL should have flagged the issue while carrying out the valuation and the matter should have been referred to the CCEA for reconsideration. Otherwise, keeping in mind the spirit of CCEA's approval, the price at which CIL's subsidiaries were selling washed coking coal, should have been considered for calculation of intrinsic value of this mine, the absence of which resulted in under determination of upfront amount and floor price of the mine.**



### 4.3 Non-Inclusion of Mine Closure Plans in Mine Dossiers

CMPDIL was entrusted to prepare mine dossiers in respect of all coal mines to be auctioned. As per the definition of mine dossier given in the Rules, “mine dossier” means the mine dossier as referred to in sub-rule (6) of Rule 9. Rule 9 (6) provided that Nominated Authority (NA) shall finalise a mine dossier for each Schedule I coal mine, based on the information received from prior allottee under Rule 9 (1). MOC asked (November 2014) prior allottees to provide various information for determination of intrinsic value, which included approved mine plan and mine closure plan. Therefore, the information, which included mine closure plan, called for by NA from the prior allottees was to form part of the mine dossier. However, it was noticed that mine dossiers did not include approved mine closure plan in case of nine coal mines and thus remained incomplete.

MOC, in its reply (March 2016) stated that scores of items of information, including mine closure plans was sought from the prior allottees. It carried out auctions in a very compressed time frame, meeting very aggressive timelines to complete the auctions and it might be possible that one or two of those voluminous items of information in some cases were not part of mine dossiers. Therefore, the absence of mine closure plan should not be considered as deviation from the rules. Also, there was no information asymmetry for the bidders of those nine mines affecting the fairness and transparency of the e-auction process.

**The mine dossiers remained incomplete in the absence of the mine closure plans, in respect of nine coal mines.**