



## **COST BENEFIT ANALYSIS REPORT**

[As per MoEFCC Guideline 7-69/2011-FC(Pt.) dtd. 01 August, 2017]

### **Amrapali Open Cast Project(431.59Ha) Magadh & Amrapali Area**



Central Coalfields Limited  
(A Miniratna Company)  
Govt. of India Undertaking

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Dilip Kumar Shari  
Project Officer  
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**Introduction:**

Amrapali coal block of CCL is located at Chandawa district of Jharkhand and has a coal production capacity of 12MTPA. It is located in the northern fringe of N.K Coalfield and lies in the Chatra District of Jharkhand. The Amrapali block covers an area of 10.11sq Km. The Amrapali OCP is enclosed by Pachra block on the east and Koed block on the west.

**Communication:**

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The nature of forest land for which application for diversion of forest land to be applied at Amrapali OCP(431.59Ha) falls in Class III MDF forest. As such Rate of NPV comes out as Rs 8,03,000 per ha for 431.59Ha of the proposed forest land for diversion.

Table 1: Calculation rate for NPV in respect of Amrapali OCP(431.59Ha)		
Description	Amount in Rs.	Amount in Rs. Lakhs
Total NPV @Rs.803000/Ha	346566770	3465.66770
10% NPV Value	34656677	346.56677
30% NPV Value	103970031	1039.70031
50% NPV Value	173283385	1732.83385

**2.0 Purpose for Cost benefit analysis:**

Cost benefit report is required for making online application in Part-1,G. The report has been prepared on the basis of MoEFCC circular no. 7-69/2011-FC(Pt.) dated. 01 August, 2017. (copy Attached as Annexure A).

**Table 2 : Breakup of Land**

Area	Name of Project	Area as per Mine Plan	Total Area as per forest application (in Ha)	Forest Land as per Application (in Ha)	Notified Forest as per Application (in Ha)	GMK JJ/Revenue Forest as per Application (in Ha)	Non Forest Land as per Application
M&A Area	Amrapali OCP(431.59 Ha)	1298.98	431.59	431.59	335.45	96.14	334.2

### 3.0 Details of Project Affected Family (PAF):

Table 3 : Detail of Household shifting

No. of villages to be rehabilitated	Name of village to be Rehabilitated	No. of Project affected person	No. of PAF to be shifted at R&R site	No. of tribal amongst PAF	No. of Tribal PAF to be shifted within District
5	Ursu, Kumrang kala, Binglat, Honhe, Kumrang & Khurd	1500	1500	200	200

### 4.0 The details of nature of forest land for which application for diversion of forest land applied are as under:

Table 4: Rates of Net Present Value, Compensatory Afforestation, Carbon Storage, Soil Conservation,

Moisture Conservation applicable to forest application

Area	Name of Project	Economy Class of Forest	Type of Forest	Rate of NPV in Rs/Ha	rate of CA in Rs/ha	Rate of Soil conservation in Rs/Ha/Yr	Rate of Moisture conservation in Rs/Ha/Yr	Rate of gain in Forest Cover due to CA in Rs/Ha	Rate of increase in Carbon Storage Cap due to CA in Rs/Ha
M&A Area	Amrapali OCP(431.59Ha)	III	MDF	803000	176009	9024	1269	177000	174319

Table 5: Amount in Rs. Lakhs as per Table-4 above for the forest application

Area	Name of Project	Amount of NPV (in Lakhs)	10 % NPV Amount (in Lakhs)	30 % NPV Amount (in Lakhs)	50% NPV Amount (in Lakhs)	Loss due to CA (in Lakhs)	Loss due to Soil & Moisture Conservation (in Lakhs)	Benefits due increase in Forest cover due to CA (in Lakhs)	Benefits of Carbon Storage due to CA (in Lakhs)
M&A Area	Amrapali OCP(431.59Ha)	3465.6677	346.56677	1039.70031	1732.83385	1215.41958896	1066.16541	1222.26288	1203.74939536

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Table 6: Cost of Land as per Prevailing Circle Rate

Name of Village	Type of Land in Vicinity	Cost of Land as per Circle Rate in Rs. Lakhs
Ursu, Kumrang kala, Binglat, Honhe, Kumrang & Khurd	Agricultural	3470.971

**Table 7: Cost of human resettlement in Rs Lakhs (As per R&R Policy)**

Monetary Compensation to PAFs	Compensation to homestead for Alternate housing	Compensation to Homestead as Subsistence Allowance	Compensation to landless Tribal family	Cost of human settlement
2966.4355	0	1075.5	300	4341.9355

**5.0 Taxes levied and collected by Government**

These taxes collected are used for the people and is thus directly related to benefits to economy / society.

**Table 8: Taxes collected by Government in Rs. Lakhs**

CSR - 2% of Retained Profit	Royalty 15 of sales value	District Mining Fund	National Mineral Fund	Taxes levied as Coal Cess	GST collected for Expenditures (Capital/Revenue )	Stowing Cess	Other taxes if any
27555 29312	346572.02	103971.60	6931.44	931520	7284.72	0	0

Benefits due CSR activities as per Company's Act 2012.

Royalty Reference : (1) Extraordinary gazette , part II – Sec 3(i), MoC Notification New Delhi , the 10th May 2012

(II) Extraordinary gazette , part II – Sec 3(i), MoC Notification New Delhi , the 31st Aug 2016

  
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**CALCULATION AS PER MOEFCC CIRCULAR NO. 7-69/2011-FC(PT.) Ddt. 01 AUGUST, 2017.**

**I. Estimation of cost of forest diversion**

**1. Ecosystem services losses due to proposed forest diversion**

Economic value of loss of ecosystem services due to diversion of forest = Net present value (NPV) of the forest land being diverted as per prescribed by the Central Government (MoEF&CC).

As the Forest land proposed does not fall in National park & Wild life sanctuary

Ecosystem services losses due to proposed forest diversion for 341.59 ha = Rs. 3465.6677 Lakhs(Ref Table 5)

**2. Loss of animal husbandry productivity, including loss of fodder**

No. of PAFs = 1500

Assuming no. Of animal husbandry as 4

Factor = 60

Loss of animal husbandry productivity, including loss of fodder=1500\*4\*365\*60  
**=Rs.1314Lakhs**

10% of NPV = Rs. 346.56677 lakhs (ref Table 5)

Since Loss of animal husbandry productivity is more, thus as per guideline:

Loss of animal husbandry productivity, including loss of fodder = **Rs1314lakhs**

**3. Cost of human resettlement as per R&R Plan =Rs 4341.9355 Lakhs**

(Refer Table-7)

As per MoEFCC guidelines the cost of human settlement is to be quantified and expressed in monetary terms. For expressing the cost of human settlement the R&R policy of Coal India has been taken into consideration. The different components that has been considered are as follows :

(As per R&R Policy)

Monetary Compensation to PAFs - Monetary compensation @ Rs.5.0 Lakh per acre subject to a minimum of Rs.0.50 Lakh. The compensation can be paid in form of annuity also on monthly, quarterly, annually etc upto 60 years of age or life of project, whichever is earlier.

Note : A person receiving employment forgoes all claims to monetary compensation and a person receiving monetary compensation forgoes all claims to employment.

Compensation to homestead for Alternate housing - Compensation for homestead building as per standard valuation method under LA Act. Payment of Rs 3.0 Lakh in lieu of alternate housing site, assistance in designing & shifting, compensation for construction of cattle shed and working shed etc.

Compensation to Homestead as Subsistence Allowance - Subsistence allowance to each affected family @ 25 days Minimum Agricultural Wages per month for one year.

Compensation to landless Tribal family - Affected landless tribal families will be provided one time financial assistance equivalent to 500 days MAWs as a compensation for loss of customary rights.

**4. Loss of public facilities and administrative infrastructure(Roads, buildings, schools, dispensaries, electric line, railways, etc.) on forest land, which would require forest land if these facilities were diverted due to the project = Rs. 0.00**

**5. Possession value of forest land diverted**

Amount as per Circle rate of adjoining area= **Rs 3470.9710 Lakhs(Ref Table 4)**

30% NPV = **Rs. 1039.70031Lakhs (Ref Table 5)**

Since circle rate of adjoining area is more than NPV paid therefore as per guideline,

Possession value of forest land diverted= **Rs 3470.9710 Lakhs**

**6. Cost of suffering of oustees=Rs 32616 Lakhs**

No. Of Outsees = No. of PAFs = 1500

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## 7. Habitat Fragmentation cost

Cost due to fragmentation has been pegged at 50% of NPV applicable as a thumb rule (Ref Circular MoEF)

50 % of NPV = Rs. 1732.834 Lakhs (Ref table 5)

## 8. Compensatory afforestation and soil & moisture conservation cost

Cost of Compensatory Afforestation and soil & moisture conservation = Rs. 2281.59 Lakhs

## II. Estimating benefits of forest – diversion in CBA

1. Increase in productively attribute due to the project = Rs. 1722205.82 Lakhs

2. Benefits to economy due to specific project = Rs 1423835.0712 Lakhs

3. No. of population benefitted due to specific project = 29640

4. Economic benefits due to direct and indirect employment due to project:

Economic benefits due to direct employment due to project in Rs. Lakhs = 17686.65

Economic benefits due to indirect employment due to project in Rs. Lakhs = 2361.32

Total Economic benefits due to direct and indirect employment due to project in Rs. Lakhs = 20047.97

## 5. Economic benefits due to compensatory afforestation:

Economic benefits due to Compensatory afforestation only in Rs. Lakhs	Economic benefits due to Carbon Storage due to CA in Rs. Lakhs
1222.263	1203.75

Total Economic benefits due to compensatory afforestation = Rs 2426.012 Lakhs

Table: Estimation of cost of forest diversion (as per table B of guidelines)		
Sl No	Parameter	Result (in Lakhs)
1	Ecosystem services losses due to proposed forest diversion	3465.6677
2	Loss of animal husbandry productivity, including loss of fodder	346.56677
3	Cost of human resettlement	4341.9355
4	Loss of public facilities and administrative infrastructure (Roads, buildings, schools, dispensaries, electric line, railways, etc.) On forest land, which would require forest land if these facilities were diverted due to the project	NIL
5	Possession value of forest land diverted	3470.9710464
6	Cost of suffering of oustees	32616
7	Habitat Fragmentation cost	1732.83385
8	Compensatory afforestation and soil & moisture conservation cost	2281.585
	<b>Total Loss in lakhs</b>	<b>48255.56</b>

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Table: Existing guidelines for estimating benefits of forest – diversion in CBA (As per Table C of Guidelines)		
Sl No	Parameters	Result(in Lakhs)
1	Increase in productivity attribute to the specific project	1722205.82
2	Benefits to economy due to specific project	1423835.0712
3	No of population benefitted due to specific project	29640
4	Economic benefits due to direct and indirect employment due to project	20047.97
5	Economic benefits due to compensatory afforestation	2426.0122
Total(2+4+5)		14463090.057

Cost to benefit ratio =  $48255.56/1446309.06 = 1:29.97$

  
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